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Vol. 121, No. 5 May 1955

The Journal of NERVOUS AND MENTAL DISEASE

An Educational Journal of Neuropsychiatry, founded in 1874

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Published monthly by
THE WILLIAMS & WILKINS COMPANY
BALTIMORE 2, MARYLAND

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The Journal of Nervous and Mental Disease

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The Journal of
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EVOLUTIONARY BASIS OF SEXUAL ADAPTATION[1]

SANDOR RADO, M.D., D.P.Sc.[2]

In the human adult we speak of the standard or reproductive pattern of sexual performance marked by the following features: close physical contact and climactic genital union of male and female; pleasure and welfare emotions (desire, joy, affection, love and pride); absence of pain and of emergency emotions (fear, rage, guilty fear and guilty rage) (12, 13). We view this pattern as the healthy form of sexual adaptation.

Standard performance may be impaired by debilitating or incapacitating inhibitions; these are cases of impaired adaptation. In another ...ss of cases a modified pattern takes the place of the standard pattern. From the point of view of motivation, the appearance of such modified patterns may be incidental, situational or reparative.

Incidental modifications are motivated by the desire for variation. The individual has adequate capacity and opportunity for standard performance.

Situational modifications occur in limiting conditions such as segregation or other lack of opportunity. When the situation changes, as a rule the individual reverts to the standard pattern. Incidental and situational modifications show the elasticity of healthy sexual organization.

Reparative modifications are the more rigid consequence of a disordered ontogenetic development of the sexual function. Incapable of standard performance, the individual depends for satisfaction on a modified pattern forced upon him by automatic processes of repair, working for the most part outside his range of consciousness. In our society such individuals are branded as offenders even if their sexual activity involves no damage and is carried out by mutual consent. These reparative modifications are true psychiatric disorders, complicated by the patient's justified fear of the consequences. We view them as deficient though more or less effective forms of sexual adaptation.

Modified patterns of courtship and mating also occur in subhuman species under natural conditions. However, when opportunity arises, the animal reverts to the pattern characteristic of its type. It does not develop dependence on a modified pattern spontaneously. The persistence of deficient sexual adaptations appears to be peculiar to the human species.

Recent advances in the biological and cultural sciences have considerably increased the value of the evolutionary point of view, recognized in psychoanalysis from the outset. Phylogenetic, cultural and individual history, and genetics deal with different aspects and phases of the same evolutionary process. In the present paper an attempt will be made to trace the healthy, impaired and deficient forms of sexual adaptation to their biological and cultural origins, and to arrive at a *unified evolutionary framework of meaning.*

Evolution of the Nervous System in the Vertebrates

In the evolutionary line from fish to man, the successive forms have changed from life in

[1] Portions of this paper were presented in the panel discussion on "Sexual Perversions" at the Mid-Winter Meeting of the American Psychoanalytic Association, December, 1953. The entire paper was read before the Seventh Annual Institute in Psychiatry and Neurology, Veterans Administration Hospital, North Little Rock, Arkansas, February 24, 1955.

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water to life on land, from the mass movement of swimming to standing and running, first on four feet, then on two. The latter transformation has been followed by the emergence of manipulative skills, the use of tools, conceptual thinking, talking and writing. During this evolution, the nervous system has grown and new brain parts have appeared. More and more the forebrain has come to cover, overshadow and dominate the nervous structures from which it has developed. In the words of C. Judson Herrick, the forebrain has evolved as a "synthetic apparatus of control" that integrates the activities of all the other parts of the nervous system and increases the animal's capacity to modify its performance in the light of previous experience. Its "explosive" phylogenetic growth has made the forebrain the supremely distinctive organ of the human species (8).

Mammalian Evolution of the Sexual Pattern

In recent decades a novel type of experimental work has been done on mammalian species ancestral to man, designed to explore, by the method of comparative analysis, the *physiological* organization of sexual behavior. Frank A. Beach has had the largest share in these investigations, fitting their results into a comprehensive theory and publishing a critical review of the literature (2, 3).

Two lines of investigation were followed: one concerned with the central nervous mechanism of courtship and mating; the other, with their hormonal control. In the course of mammalian evolution, with the phylogenetic development of the brain, several changes have taken place in both. In the lower vertebrates the nervous machinery of courtship and mating is in its entirety innately organized. In the adult animal with no previous sexual experience a simple set of stimuli suffices to bring into play a stereotyped and automatized operating pattern. Nor is there any margin for significant modification by experience. To this automatic nervous organization, one may fittingly apply Claude Bernard's remark: "Nature thought it prudent to remove these important phenomena from the caprice of an ignorant will." However, during mammalian phylogenesis, this rigid innate nervous organization has gradually broken down, and the pattern has become increasingly modifiable and dependent for its completion upon experience. The sexually inexperienced adult male chimpanzee, when aroused, is unable to effect union with a receptive female without first undergoing "a long period of practice and learning" (2). In our species, only a few discrete fragments of the total pattern have remained innate reflexes: erection, orgasm, and perhaps pelvic thrust. The rest of the pattern has to be learned.

Gonadal secretions exert powerful and specific effects upon the patterns of courtship and mating in all mammalian forms. Their mode of action on the nervous system is imperfectly known. They seem to strengthen the effects produced by nervous mechanisms in a selective fashion, presumably depending upon the differential biochemical composition of the nervous structures involved. In any case, at lower evolutionary levels, sexual behavior is strictly controlled by gonadal hormones. But with the advancing phylogenetic status of the species the controlling significance of hormones is gradually reduced and limited to certain discrete components of the total nervous mechanism. At the same time, control over the total pattern shifts to the "synthetic apparatus" located in the forebrain.

In both lines of experimental study the available evidence points to the same conclusion: *the human male and female do not inherit an organized neuro-hormonal machinery of courtship and mating. Nor do they inherit any organized component mechanism that would—or could—direct them to such goals as mating or choice of mate.* In the light of this evidence, the psychoanalytic theory of sexual instincts evolved in the first decades of this century becomes an historical expedient that has outlived its scientific usefulness. Each of the sexes has an innate capacity for learning and is equipped with a specific power plant and tools. But in sharp contrast to the lower vertebrates, and as a consequence of the encephalization of certain functions first organized at lower evolutionary levels of the central nervous system, they inherit no organized information or directions concerning the use of this equipment.

The Standard Sexual Pattern of Contemporary Man

Observation shows that the healthy human adult periodically enters upon a sexual motive state—a state of acute desire—that readies the organism for sexual performance. The goal desired is the climactic genital union of male and female. Extensive participation of extragenital parts in this union shows that the sexual motive state transforms the entire organism into a single instrument of sexual expression and gratification. The motivation is thus preponderantly hedonic, often even to the complete exclusion of reproductive intent. Nonetheless the fact remains that orgasm is a reflex effect produced by the reproductive systems; in both sexes, it is nature's massive hedonic reward for insemination (15). The reproductive systems are the *raison d'être* of the sexes; orgasm serves the process of reproductive integration that alone renders evolutionary differentiation into male and female biologically effective.

Beginning with its gross peripheral *physiology*, orgasm is a reflex response, evoked in both sexes by the reciprocal stimulation of genital union. It may be described as a cycle of peristaltic contractions of genital (and adjacent) structures. In the male, its reproductive function is to transport and eject the seminal fluid, and in the female, to facilitate this act of ejection by the stimulative effect of *active* reception. Less well understood is the complex *psychodynamic* organization that rests upon this peripheral physiology. Reciprocal stimulation leads to the accumulation of pleasurable tensions, and orgasm to their climactic release. The psychodynamic effectiveness of the entire mechanism depends upon quality and volume of the tensions accumulated and upon the completeness of their discharge. Both vary widely from individual to individual and at different times in the same individual. Pleasurable tensions may be generated by stimulation of contact receptors and distance receptors, and through the activation of pleasant memories and wishful expectations. Desire and love give rise to a stream of emotional tensions composed of many currents.[3] The same is true of pride (12, 15). These welfare emotions increase the pleasurable tension and the value of its release. But an admixture of unpleasant tensions, stemming from inappropriate emergency emotions, is an unwelcome cultural complication of the standard pattern because their inhibitory action renders release incomplete.

In human life the climactic union of male and female is an overwhelming shared emotional experience. Apart from its reproductive function, it must be recognized as the *master-mechanism for the pleasurable accumulation and discharge of superabundant emotional tensions.*[4] Evolution of the forebrain has increased the adaptive value of this emotional mechanism, an increase that reflects the extent to which our emotional life has risen—in differentiation, refinement and complexity—above that of our subhuman forebears.

Of course, the genital union of male and female may be completely unaffectionate, achieving no more than a rudimentary orgasm that relieves pressing but isolated sexual tensions and serves as an outlet for glandular secretions.

Cultural Evolution

Retracing our steps, we shall now describe the cultural evolution of the sexual pattern.

Through the ages our species has lived in societies that have handed down their achievements and possessions from parent to offspring in a continuous chain. Cumulative tradition is a cultural mechanism of inheritance, an external counterpart of the genic mechanism of inheritance. Some of the innate reflexes and automatized patterns of activity may be interpreted as "built-in" centers of information and direction. Our cultural resources of learning—such as parents, teachers, libraries—are similar centers established in the environment. In the evolution of the central nervous system certain lower-level functions have been in part

[3] The pair "in love" reactivates the child's blissful reliance on loving parental care and blends it with mature sensual desire. The female becomes an idealized version of the feeding mother; the male, of the protecting father. By this magic, they may achieve the illusion of incestuous fulfillment in a state of impervious security. Their triumph makes them self-sufficient, oblivious to the rest of the world.

[4] The superabundance of tensions was pointed out by Sandor Ferenczi (5); subsequently, Franz Alexander (1) proposed to explain this fact by his concept of "surplus energy."

encephalized, in part externalized, i.e., lifted to the societal level of the species.

Once this stage of central nervous organization has been attained, education becomes a biological necessity. Through the millenia, primitive societies have carried out sexual education of the young in a ritualized fashion. While such instruction has featured the evolutionary pattern of male-female pair, societies have also evolved normative codes imposing cultural restrictions upon the sexual activity of their members. Penalty of extinction compelled them to abide by the evolutionary pattern of the male-female pair; but why did they invent and perpetuate the system of normative codes?

In dealing with this question, we must rely on the method of evolutionary extrapolation that aims at reconstructing ancient man's thoughts, feelings, and doings on the patterns of motivation known to us from the study of contemporary human behavior.

Let me begin with the psychodynamic proposition that a society is an organized group held together by the forces and mechanisms of *competitive cooperation*. Group organization is always hierarchical, marked by relationships of dominance and subordination, centralized control and local independence. These hierarchical relationships change from time to time in a perennial contest of supremacy fought with a combination of forces: emotional, intellectual, spiritual, muscular, and material (16).[5]

At the dawn of civilization—presumably some hundred thousand years ago—contests of supremacy may have been decided by the muscular strength of emotionally aroused men. Aside from Darwin's observation on the life of higher apes, this assumption may have inspired Freud's (7) brilliant hypothesis that in primeval human groups the strongest male monopolized every female in his reach.[6] His boundless jealousy—desire for exclusive possession—his drunken pride of self-importance and his fists led to the establishment of the first sexual taboos, and with them to the cultural institution of sexual laws and mores.

In the course of time, sexual behavior became enmeshed in a network of rivalries. To the struggle between fathers and sons were added the fight of sons with one another; the female's battle with the male, her scheming for sexual self-determination and privilege; the conflict of mothers and daughters and of daughters with one another, etc. From the integration of sexual desire with the need for food, shelter, protection and parental care of the young emerged the institutions of tribe, household, family and the diverse marital orders of polygyny, polyandry and monogamy.

The emotional dynamics of polygyny and polyandry has been profoundly influenced by abundance or scarcity of food, exposure to attack or safety of geographical isolation, relative wealth or poverty, making it desirable if not imperative to increase, or on the other hand to limit, the size of population (9). These marital systems brought new sexual prohibitions and restrictions, but at the same time also growing foresight, wisdom and readiness for compromise. Comparative historical study of the three marital systems lies beyond our present purpose; it suffices to say that in Western civilization monogamy has prevailed. Monogamous marriage is a partnership based on the idea of non-competitive cooperation with one another.

Primitive societies excel in accepting the emotional nature of Man and making provisions for it. They reinforce the stability of the established order by a periodic relaxation of their sexual taboos in the excesses of religious feasts. Similarly, Western civilization has safeguarded the institution of monogamy by substituting *tacit* relaxations for the ritualized ones.

In contemporary societies the sexual laws and mores derive from the same dynamics of competitive cooperation as they have done

[5] Competition is adaptive only to the extent to which it improves cooperation; ruthless competition tends to destroy the group. In general, the more a group organization respects the individual's dignity as a human being, the greater its chances for survival and healthy growth. Members of a group may have three kinds of emotional relationship to one another: contemptuous hate, indifference, and affectionate respect. The first is self-liquidating, the second inadequate; the biological optimum for creative cooperation may be achieved only by the third. Intuitive recognition of this biological fact—variously formulated as the golden rule of conduct, the categorical imperative, the doctrine of brotherly love or the humanistic ideal of peaceful cooperation—is the basis upon which the great ethical systems of mankind have been built (16).

[6] Congratulated on this achievement Freud remarked: "I should like to see it in the cinema." He did not live to see Walt Disney's documentary film, *Seal Island*.

since time immemorial. The weapons used range from tradition to reason, from cunning to guns.

Ontogenetic Development: the Campaign of Deterrence

Our cultural tradition requires that children be reared for a monogamous life mitigated by the tacit relaxation known as the double standard. Though since World War I the emancipation of women has ushered in an era of spreading enlightenment and change, the influence of tradition is still overwhelmingly strong.

How does traditional education seek to achieve its goal? It first keeps children ignorant of sexual matters. Later, it seeks to deter them from sexual activity and interests. The open tactical measures employed in this long drawn-out campaign of deterrence derive from a hidden strategical plan that abounds with historical (if not prehistorical) connotations. By far exceeding the intent of the incest taboos of society, this plan makes the sexual act appear as an act of violence perpetrated by the male upon the reluctant or foolishly consenting female. It may be denounced as a sin or something that a nice child should not even think of doing. The threat of severe and inescapable punishment is extended to genital self-stimulation with its attendant imagery of sexual union. The boy is threatened with punitive removal of his offending organ or sinning hand, or with some dreadful disease in consequence of his evil doing. If caught in sexual play with a girl, he is warned that he will inflict fateful damage on her, leading to merciless retaliation. And she is warned that such contact with a boy will destroy her anatomic and emotional integrity and social standing. This indoctrination is reinforced by the chance observation of parental intercourse and its misconception as an act of violence; and by the discovery that sexual activity causes bleeding (menstruation, defloration, birth). As a consequence, the boy comes to believe that the female organ is an open wound, resulting from the violent removal—cutting off or tearing out—of the missing penis; the girl comes to believe that the male organ is a destructive weapon. Naturally, each is also influenced by the other's misconceptions.

To this campaign of deterrence boys and girls respond with diverse fears of sexual degradation culminating uniformly in both sexes in a *fear of penetration*. At the same time, the brutal interference with their sexual desires unleashes in them defiant rage against the disciplinary authorities—above all the mother—soon to be repressed by their fear of parental punishment and need for loving parental care. The resulting dynamic formation of prevailing fear over repressed yet overflowing rage is unstable; the overflowing portion of rage must be retroflexed and vented in self-reproaches that transform the prevailing sexual fears into *guilty* sexual fears (12, 14). In its entirety, in both sexes, the child's emergency response is composed of fear, guilty fear, distrust, suspicion and resentment of the mother (disciplinary authorities), of the opposite organ, and eventually of the opposite sex. Instead of helping the child to evolve a biologically and culturally healthful pattern, the agencies of society spoil the welfare context of sexual union by injecting into it the idea of violence and the corresponding emergency emotions.

Historically, the need to place violence in the center of sexual education and thus turn it into a campaign of deterrence may have originated with women. In the perennial battle of the sexes, women may have invented this strategic though self-defeating scheme in order to avenge their sexual servitude; the men who ruled them may have consented because it has obviously strengthened their own jealously guarded prerogatives.

The Outcome: Healthy, Impaired and Deficient Sexual Adaptation

As a rule, primitive societies elevate the young to sexually full-fledged members of the community by the initiation rites of puberty. In modern societies, traditional education seeks to continue the child's early anti-sexual adaptation throughout puberty and adolescence. Then this infantile adaptation is expected to transform itself into a sexually mature adaptation to the conditions of adult existence.

In fact, traditional sexual education results in the three forms of sexual adaptation briefly defined in the opening section of this paper. We are now prepared to examine them in greater detail.

One part of the population achieves a more

or less healthy sexual adaptation—if not in the beginning, then after marriage. In this event, the early violence conception and the corresponding emergency emotions are repressed and reduced to rudiments.

In the second part of the population sexual adaptation is impaired by open inhibitions of varying severity, which may debilitate desire, performance, love and marriage. The patient may suffer from lack of desire, failure of erection, faltering or rushed performance, and—particularly the female—from failure of sensation or climax. Though not always aware of it, the patient suffers profound humiliation from his inadequacy. These disorders are traceable to the persistence or recrudescence in the adult of the sexual fears and resentments of childhood, now overlaid by an array of more or less realistic worries, apprehensions and grudges. Characteristically exaggerating the sexual laws and mores, the patient lives in constant dread of violating them. The distorted outlook of childhood may include faulty marital expectations which, persisting into adulthood, destroy the cooperative relationship essential to marriage, producing such disruptive consequences as irrational jealousy, intra-marital competition and struggle for dominance or, on the other hand, compensatory over-dependence modeled on the infant's alimentary pattern. Sexual impairment of both spouses brings a vicious circle into play.

The hidden pathogenic factors directly responsible for the inhibitions, and less directly for the other symptoms, are the same in both sexes: the old guilty fears of penetration and the old resentments of the opposite organ and the opposite sex. The powerful persistence of these infantile responses is an unsolved problem. As we have seen, the healthy child "outgrows" them; their tenacity in the others may be due to the innate strength of fear and rage or to the harshness of parental discipline. Also, there may be present some innate weakness in the organization of pleasure, love and the orgasm reflex that increases their vulnerability to the impact of emergency emotions of excessive strength (12, 14).

The third part of the population emerges from ontogenetic development with deficient although more or less effective sexual adaptation. The pattern of standard performance is both undeveloped and inhibited. To obtain satisfaction, the patient must abide by a modified pattern forced upon him by automatic processes of repair. Under our present laws these reparative patterns bring the patient into conflict with society. This fact gives rise to further compensatory developments aimed at assuaging his social fears. Here we shall consider these reparative patterns under three headings: reparative organ replacement and organ avoidance; sexual pain-dependence; reparative formation of homogeneous pairs.

Reparative Organ Replacement and Organ Avoidance

In a group of reparative patterns the dreaded and resented genital organ of the opposite sex is either replaced by other body parts or, by means of still other arrangements, avoided altogether. The extreme form of avoidance is replacement of the human mate. The reparative processes often evolve these patterns by reverting to a mode of arousal discovered and successfully used during the early period of growth. The organism's innate sensory susceptibilities to sexual arousal have a spectacular compass; depending upon the circumstances, almost any person, animal, object or activity may come to play the part of an effective stimulant. Due to anatomic variation, a body part may have a richer nerve supply; its stronger pleasure response to stimulation may then establish a site of preference.

Sexual Pain-Dependence

Modeled on the violence conception of the sexual act, the pain-dependent patterns are triggered by a mechanism of *preliminary riddance*, interpreted as *advance punishment* (12). Standard performance is inhibited by the patient's guilty fear of inescapable punishment. To free himself from the crippling inhibition, he undergoes beforehand the dreaded punishment by inviting humiliating treatment from the mate. Or, in an outburst of repressed yet overflowing rage, he inflicts on the mate the punishment he dreads, sharing vicariously the latter's suffering. The response of sexual climax is made possible by these mechanisms of preliminary riddance from fear through advance punishment.

The forms of sexual pain-dependence fall

into three groups: criminal, dramatized and hidden.

In the criminal forms, pain-dependence precipitates what amounts to a savage execution of the violence conception of the sexual act. Lust-murderers—some twenty of them—examined for the German courts by the late Johannes Lange, were without exception incapable of standard performance, reaching sexual climax through the act of violence (10). The prototype of the criminal form of sexual pain-dependence is rape.

The dramatized forms of sexual pain-dependence first came to public attention through the literary output of the Marquis de Sade (1740–1814) and von Sacher-Masoch (1835–95). In these forms two consenting mates enact, *short of severe pain and serious physical injury*, a dramatized version of the violence conception of the sexual act. Both forms—the fear-ridden and the enraged—are staged performances. The daydreams attendant upon pain-dependent genital self-stimulation often draw their material from literary sources.

The hidden forms of sexual pain-dependence are extremely common. They are revealed in a large variety of clinical manifestations: quarrelling as a prelude to a truly happy embrace; lack of sensation or climax due to an unconscious desire to be raped, betrayed by a corresponding conscious dread of rape; use of the self-tortures of irrational jealousy as an aphrodisiac; surprise orgasm elicited by latent or open fear in the absence of sexual desire, etc.

Reparative Formation of Homogeneous Pairs

The campaign of deterrence causes the female to view the male organ as a destructive weapon; and the male to see in the "mutilated" female organ a reminder of inescapable punishment. Fear and resentment of the opposite organ, though unrecognized, may be so insurmountable that the individual escapes from the male-female pair into a homogeneous pair. Male pairs are based on the reassuring presence, and female pairs on the reassuring absence, of the male organ. However, the crucial facts are that in male pairs one male impersonates a female, and in female pairs one female impersonates a male; they pretend to be a male-female pair. The anal mount practiced by male pairs openly imitates the pattern of male-female union; the phallic artifices used by female pairs serve the same purpose. Homogeneous pairs satisfy their repudiated yet irresistible male-female desire by means of shared illusions and actual approximations (12). One sees now the true significance of Freud's momentous discovery that in childhood these individuals were closely attached to persons of the opposite sex and had strong sexual desires for them (6).

The male's sexual desire for a male—and the female's for a female—are blinds that enable them to represent their sexual defeat as a triumph of sexual self-realization. This revised motivational analysis of so-called "homosexuality" should not come as a surprise. The anatomy of the sexes outlines the evolutionary pattern of male-female pairs; and the cultural institution of marriage ingrains the same pattern in every human being since early childhood. No force, save for schizophrenic disorganization, can break its strength. If driven underground, the male-female desire achieves *imaginary* fulfillment through homogeneous pairs, despite the fact that such pairs are formed in forced avoidance of the opposite sex. Such "return of the repressed," by way of the very bulwark erected against it, is one of the best known Freudian mechanisms.

In societies that prohibit the formation of homogeneous sexual pairs, the individual dependent for gratification on this pattern lives in constant dread of detection and punishment. To restore his equilibrium he often clings to the myth that he belongs to a third sex, superior to the rest of mankind.

For emotional security, homogeneous pairs, like male-female pairs, tend to fall back on the resources of the system of infantile dependence. Chiefly alimentary in its motivation, this mutual dependence is patterned on the mother-child (by substitution: father-child) relationship (4).

Dependence on the formation of homogeneous sexual pairs is a deficient adaptation evolved by the organism in response to its own emergency overreaction to the "campaign of deterrence." Since the 1880's, so-called "homosexuality" and "heterosexuality" have been interpreted as manifestations of a supposed "general constitutional bisexuality." How-

ever, the latter concept proved to be an unwarranted biological generalization. It is true that in certain lower species, as for instance in earthworms, each individual has a complete male and female sexual apparatus and uses both of them effectively for reproduction. But in human anatomy the two reproductive systems are mutually exclusive; the functional pattern of the sexually mature human individual bears no significant causal relation to the zygote's bipotentiality of embryologic differentiation (11, 12). A human being is either a male or a female, or, due to a failure of embryonic differentiation, is anatomically deformed. It is common knowledge that these malformed individuals are possessed by the desire to be of but one sex.

The unified conceptual scheme here outlined may be applied to problems of evolutionary adaptation in other behavior areas.

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PERCEPTION OF SIMULTANEOUS TACTILE STIMULI IN EMOTIONALLY DISTURBED CHILDREN AND ITS RELATION TO THEIR BODY IMAGE CONCEPT

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Fink and Bender (6) have described the perception of simultaneous tactile stimuli in normal children. They found an order of dominance of perception of body parts: Face-shoulder-trunk-thigh-foot-hand. In a later paper (1) Bender, Green and Fink found that in the order of dominance of perception the genital region was second only to the face in normal children. In another paper Robert Cohn (5) has postulated a relationship between the pattern of perception of tactile stimuli and the child's body image concept as indicated in drawings. Cohn's experience has indicated consistently a rostral dominance of perception which he feels is correlated with the known development of children's human figure drawings from a stage where only the head is drawn to a more complete representation of the body.

The purpose of the present study was to determine: 1) What is the pattern of perception of double simultaneous cutaneous stimulation in emotionally disturbed children? 2) If the double simultaneous stimulation test (hereafter referred to as the DSS test) can be used as an indicator of a child's body image problems.

Theoretical Considerations

In this paper, by "body image" is meant not only "a visual, mental or memory image" of one's body (10) but a sense of that body functioning in relationship to the bodies of others (9). The interpretation of human figure drawings and story compositions as well as psychiatric interviews together with the history of a patient are accepted methods of constructing a concept of a patient's body image. If the responses obtained on the DSS test are related to body image, then the responses should have some relationship to projective and clinical data already accepted as indicative of the body image. Thus if such clinical and projective data are aligned with DSS responses, if DSS responses have anything to do with body image, it would be expected that where there is a distorted body image, there might be errors in the DSS responses related to the distortion. Evidently, if a child gives a perfectly correct series of responses on the DSS test it is not fair to conclude that DSS responses have no relationship to body image. However, if a child does have a body-image disturbance, and does make errors on the DSS test, then if the two kinds of data are related it is reasonable to expect that the nature of the DSS response error could be related to the known nature of the body-image disturbance.

Each piece of data must be interpreted in its own nature. It is not reasonable to carry over the same kind of interpretation from one set of data to another. For example, in the case of children deprived of affection and reacting to this with anger which they try to control, drawings of a certain kind are often found: The arms are either left off or the hands put behind the back. In the kind of correlation sought in the DSS errors, extinction or displacement of the hands might be thought of as the equivalent expression of repressed anger. However, in view of the fact that all authors agree that on DSS tests subjects report many areas more consistently than the hand, this normal "disregard" for the hand in DSS responses must be considered in any interpretation of DSS data.

In summary: The neurological pathway for DSS responses is unknown. A theoretical basis for interpreting DSS data in terms of body image is not explicit and must be speculative. In such speculation it is not reasonable to carry over the theoretical bases of interpretation from one set of data to another. It was hoped that the methods described below would obviate these sources of error.

Material and Method

Eleven emotionally disturbed children of six years and under were examined. Three were

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TABLE 1.—SEQUENCE OF ADMINISTRATION OF DSS TEST

Right-Left	Hand-Foot	Cheek-Hand	Cheek-Foot	Abdomen-Foot	Abdomen-Hand	Shoulder-Foot	Shoulder-Hand	Genital-Hand	Genital-Foot
R–L	1	4	7	10	44	29	27	24	13
L–R	16	18	20	22	45	28	25	14	30
R–R	40	2	5	8	11	26	38	31	32
L–L	41	17	19	21	23	39	15	33	35
R–L	42	43	3	6	9	12	34	36	37

outpatients; the rest were patients in the nursery of the Children's Psychiatric Ward of Bellevue Hospital. All of the children were of at least average intelligence; a few were of very superior intelligence. All the children had had complete physical examinations including neurological examinations. As a part of ward and clinic routine, all of the children had had diagnostic evaluations by a psychologist with Rorschachs and other projective tests administered in most cases.

Each of these children was tested for perception of touch on double simultaneous stimulation by the method described by Fink and Bender (6). The tests were administered in the same order (table 1), an order selected because it ruled out learning by repetition of part. Each child was given ten trials. Because of the nature of their emotional disturbances, many of these patients were difficult to contact and to engage in testing. To achieve this, repeated contacts were necessary by which time the examiner knew the patient in many facets other than the neurological. The child was asked to close his eyes and "After I touch you, you touch where I touched." If the child was able to speak easily, he was asked to "Tell me where I touched you" as well as or instead of touching the part. This was found to be particularly useful with regard to the child's genitals, which he usually did not want to touch. Often he could not find a name for his genitals and in some cases a shamefaced smile, a giggle or a firm "no" or "bad" represented recognizable identification of the genitals. The data shown on tables 2 to 4 represent the results on the final trials after the learning process was completed. It can be seen that some children had more "chances" than others. In all cases the difference represents the omission of chances at identifying genitals and abdomen in children who on previous trials had demonstrated severe anxiety with regard to the touching of the genitals. When only emotional conflict or shame was noted the examiner continued to include these body parts in the test, but where severe anxiety was noted in one or two trials the parts were eliminated from the later tests because it was felt that the information that might be obtained did not warrant possible emotional trauma to already disturbed children. However, it is interesting to note that the majority of these children showed this severe reaction and that, after manifesting anxiety reactions related to the touching of the genitals, similar reactions were noted to touching of the abdomen—a new reaction that had not been there before—and that it did not occur with parts other than the abdomen. It might be said that the anxiety "spread" from the genitals to the abdomen. It might be inferred that the abdomen was invested with a libidinal value that it had not had before the genitals were touched.

In Fink and Bender's cases, the test was presented as a game. In this series, because the children were in a hospital and knew very well that the examiner was a doctor, the tests were presented as such. However, most of the children sooner or later wanted to make a game of it and the frequency with which the child wanted to repeat the test with other children or with the examiner is regarded as an indication of the social nature of the body image concept.

After completion of DSS tests the child was asked to draw a picture of a person and make up a story about that person. Also noted were spontaneous drawings, play and stories, particularly as they related to the child's body image.

In each case, taking into account all the data exclusive of DSS responses, a construction of the child's body image was made. The following data were tabulated: Chronological age, clinical diagnosis, description of drawings and

stories, physical findings, DSS data. An attempt was made to correlate DSS data to the body-image construction and to any of the data upon which the construction had been built.

Findings

1. Pattern of Perception of Double Simultaneous Stimulation in Emotionally Disturbed Children

DSS data were collected first (tables 2 and 3). The cases were tabulated in order of number of errors since, as has been indicated, it is only in those cases where errors were made that any correlation can be made to body image. The first six children show 50 per cent or more errors after 10 trials. Displacement errors were most frequent. Table 3 is a breakdown of the kinds of displacement errors made. In administering the tests it was noted that the children with the highest number of errors were also those who made the most errors on each trial, were the slowest to "catch on" to the idea of the test situation despite good intelligence, and were the same ones who showed an unusual degree of symmetry, perseveration and denial of laterality on their protocols. One third of all the answers were errors and of these errors, 75 per cent were displacement and 25 per cent were extinction. This is a reversal of the predominance of error type found by Fink and Bender in normal children; they found that extinction accounted for 62 per cent of errors and displacement for 31 per cent of errors.

Conclusions. 1) In this series of cases the order of dominance described by M. B. Bender was found rather than that of consistent rostral dominance as described by R. Cohn. 2) Observations were made on the differences between these children and the normal children examined by Fink and Bender. The possible meaning of these observations will be discussed in Part 3 of this paper.

2. Attempts to Correlate Data with Body-Image Problems of These Children

a) Body Image as Constructed from Drawings, Stories and Interviews. These brief case summaries are presented in the same order as seen in table 3, that is, beginning with the child having the most errors on DSS tests and ending with the child having the fewest errors.

TABLE 2.—Classification of Errors in Responses to DSS Test

Patient	Extinction	Displacement	Refusal	Chances
L. K.	5	32	8	43
R. H.	3	28	0	37
B. R.	1	16	7	27
B. H.	3	14	2	32
J. S.	3	12	2	37
J. N.	11	4	2	32
M. S.	2	1	2	30
M. D.	0	0	2	37
D. D.	1	0	2	32
S. M.	0	0	2	37
P. F.	0	0	0	37
Totals	29	107	29	381

1. L. K. was admitted to the ward because of temper outbursts. He was a severely anxious and ambivalent child who alternately clung to the examiner, begging her to stay, and slapped at her in a frightened way. The ward diagnosis was childhood schizophrenia. Tests were repeated a number of times before it was possible to get one done in complete sequence. Other times L. K. would walk away in the middle of a test or he would become mute and stare into space, unresponsive. He refused to draw the human figure. He wrote his name in a shaky way with many reversals of letter and drew an intricate structure of three houses within houses which he labeled a "rocking horse" (fig. 1). He seemed unable to make up a story or tell any of his dreams. His conversation was limited to pleading for bread and butter sandwiches and the examiner's company and reiteration of his name.

2. R. H. was a 5½-year-old boy admitted to the ward because of temper outbursts and allegedly unprovoked aggressiveness at home. The ward diagnosis was neurotic behavior disorder. He was a friendly, alert child of good intelligence. He made a good relationship with the examiner and enjoyed play and telling stories. R. H.'s drawings were the amorphous, amoeba-like head commonly drawn by much younger children. The extremities protruded from the head. There was no body. The mouth had many teeth. He made two nearly identical drawings, calling one "a good man" and the other "a punching bag." Both figures represented himself as a year or two older, and each represented opposing moral aspects of his fighting others as he developed this theme in his stories.

3. B. R. was a 3½-year-old girl who had been treated for one year in the mental hygiene clinic in individual and group sessions because of assaultiveness, self-destructive actions, negativism and screaming episodes. She was a schizophrenic child with strong compulsive defenses and evident sadism directed to her mother. The mother was a narcissistic woman who did not want the child but felt compelled to treat B. R. with restrained formal "kindness." B. R. responded to

TABLE 3.—DISPLACEMENT ERRORS

Patient	No. of Errors	Stimulus	Perception	Kind of Error	Remarks
L. K.	32	RH–RF	RH–LH	P + L	Symmetry
		RC–RH	RC–L chin	P + L	Displacement to midline structure
		LC–LH	RH–LH	P + L	Symmetry
		LC–LF	LC–RC	P + L	Symmetry
		RH–LF	RH–RC	P + L	
		RC–LH	Both cheeks–LH	P + L	
		RH–RF	RH–LC	P + L	
		RC–RH	RH–LH	P + L	Symmetry
		RC–RF	RC–LC	P + L	Symmetry
		LH–LF	LH–RH	P + L	Symmetry
		LC–LF	LC–RC	P + L	Symmetry
		RC–LH	RC–left forehead	P	Displacement to midline structure
		RS–LF	RS–LH	P	
		LC–RH	LC–RC	P	Symmetry
		RS–RF	RS–table	P + L	Exosomasthesia
		LC–LH	LH–LF	P	
		RC–LF	LC–LF	L	
		RS–RF	LS–RF	L	
		LH–LF	LH–RF	L	
		RC–LF	LC–LF	L	
R. H.	28	RH–LF	RH–LC	P	
		RC–LH	RC–LC	P	Symmetry
		RC–LF	RC–RC	P + L	Perseveration ?
		RA–LF	RA–LH	P	
		RA–LH	RA–RC	P + L	
		RSh–LF	RSh–LSh	P	Symmetry
		RSh–LH	RSh–LC	P	
		Gen–F	Gen–C	P	
		Gen–H	Gen–C	P	
		LH–RF	LH–RH	P	Symmetry
		LC–RH	LC–RC	P	Symmetry
		LC–RF	LC–RC	P	Symmetry
		LA–RH	LA–R eye	P	
		LSh–RF	LSh–RSh	P	Symmetry
		LSh–RH	LSh–RF	P	
		RH–RF	RH–LH	P	Symmetry
		RC–RF	RC–RA	P	
		RA–RH	RA–RF	P	
		RSh–RF	RSh–RSh	P	Perseveration ?
		LC–LH	LC–LF	P	
		LA–LH	LA–RF	P + L	
		LSh–LH	LSh–LF	P	
		RA–LH	RA–LF	P	
		RSh–LF	RSh–L chest	P	
		RSh–LH	RSh–LF	P	
B. R.	16	RH–LF	Nose–LF	P + L	Denial of laterality; displacement to midline structure
		RC–LH	RC–LF	P	
		RSh–LF	RSh–LSh	P	Symmetry
		LH–RF	LH–RH	P	
		LC–RH	LC–RC	P	Symmetry
		LC–RF	LC–RC	P	Symmetry
		RH–RF	RC–LF	P + L	

TABLE 3—*Continued*

Patient	No. of Errors	Stimulus	Perception	Kind of Error	Remarks
B. R.—*Continued*		RC–RH	RC–both feet	P + L	Denial of laterality
		LSh–LF	LSh–RSh	P + L	Symmetry
		RH–LF	RH–nose	P + L	Displacement to midline structure
		RSh–LF	RSh–LSh	P	Symmetry
B. H.	14	RC–LH	RC–RH	L	
		RS–LF	Left shirt	P + L	Exosomasthesia
		RS–LH	RS–foot	P + L	Denial of laterality
		LA–RH	LA–desk	P + L	Exosomasthesia; denial of laterality
		LS–RH	LS–hand	L	Denial of laterality
		RA–RH	RA–RF	P	
		RS–RH	RS–RF	P	
		RH–LF	RF–LF	P	
		RC–LF	RC–knee	P	
		RA–LH	RA–LF	P	
		RS–LF	LS–RF	L	Reversal of laterality
J. S.	12	RA–LH	RA–LF	P	
		RSh–LH	RSh–RSh	P + L	Perseveration
		LC–RF	LC–LF	L	
		LA–RF	LA–LF	L	
		LA–RH	LA–LF	P + L	
		RH–RF	RH–LF	L	
		RC–RH	RC–LF	P + L	
		RC–RF	RC–LF	L	
		RA–RF	RA–LF	L	
J. N.	4	RH–LF	RH–R thigh	P + L	
		RC–LH	RC–RH	L	
		RC–LF	RC–RF	L	
M. S.	1	LC–RF	LC–RH	P	

the mother's thinly disguised rejection and tormented her ferociously. In exasperation the mother assaulted the child verbally and physically. The child responded by spells of screaming, spinning like a top, jumping from high places, assaulting other children and other disturbing behavior. Treatment of mother and child has resulted in remarkable improvement in both. B. R. remains compulsively "Touch me not" about her feet and hair. She is excessively modest and ritualistic about dressing, bathing, manicuring and about excretory functions. B. R.'s drawings of herself were scribbles, unrecognizable as resembling the human form. She made a series of similar scribbles identified as various members of her family. She appreciated good form in others' drawings and was jealous of it. She would point to lines and identify them as parts they did not remotely resemble. It might be said that her verbal identifications involved projection and confabulation. Her stories were about bad mothers who were punished by babies who suddenly grew like expanding balloons and hit their mothers for their badness.

4. B. H. was a 4-year-old boy admitted to the ward because he was unmanageable in a foster home where he teased, was over-active and had temper tantrums. He was an over-active, playful, alert child who made good contact. He was a good mimic, a tease with a sense of humor of the practical-joker variety. He reiterated his name but "teased" about his identity, stating sometimes he was the examiner and sometimes detailing how his feet were on the ceiling, his head a part of the table and how a special communion existed between himself and a mural of a colored child in the examining space. (B. H. was one of two colored children in the nursery, but he was light-skinned.) B. H. had an introjected body and auditory hallucinations as well as the above described diffusion of body image. B. H.'s drawings were of the ameboid type but body parts and clothing were included within the confines of an egg-shaped mass. Eyes, stomach, buttons, hat and feet were enclosed within a circle and the entire form was labeled "Snowman." B. H. was not much interested in telling a story about the snowman, commenting only on the transient quality of his existence. "He's good. He melts." B. H. preferred to talk earnestly and anxiously about his own body parts which he perceived as splattered all over the room and his hope that he

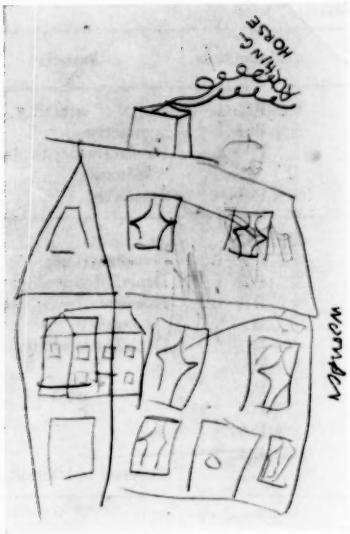

FIG. 1.

could pull the parts together. He was popular on the ward because he was verbal and affectionate. He could always be seen approaching an adult for body contact. He examined the surfaces of their bodies and investigated their belongings.

5. J. S. was a 5½-year-old girl admitted to Ward PQ 6 because of her seclusiveness and emotional withdrawal with unpredictable outbursts of temper. She was a large, thin child who spoke in a small voice. She was excessively dependent upon adult companionship. She showed an automatic obedience and excessive compliance, with sudden outbursts of peevish hostile behavior. The ward diagnosis was childhood schizophrenia. J. S.'s human figure drawing was of a large rectangle representing the torso topped by a small circle representing the head. There were no extremities and no neck. There were no features except eyes. The torso was decorated with buttons. This figure represented her "good mother" who "is gonna have a baby," a girl whom J. S. would feed.

6. J. N. was a 4-year-old boy admitted to ward PQ6 because of aggressiveness and unpredictable temper outbursts in a boarding-home placement. He was alert and playful, overactive and excessively distractable. He was ambivalent about his dependency wishes. He clung to adults and then suddenly pushed them away, punched at them and asserted that he was a strong man. His drawings were scribbles and some few well-formed circles. He could not draw a square. He told a story about a boy his age who was locked up in a bad place and got out because he was so big and strong, he beat everybody up and broke down the door. Then J. N. described a very effective way of eloping from the ward. After climbing on a table, he commented to the examiner: "I'm a big man. Bigger than you are."

7. M. S. was a 6-year-old boy admitted to the ward because of hyperactivity and destructiveness. The ward diagnosis was neurotic behavior disorder. He was over-active on the ward. In the DSS test he was friendly and cooperative, but showed great anxiety about touching his genitals, and after this part of the test he refused examination of other parts of his body. Sexual anxiety was reflected in his drawings: He drew a female figure first; the figures were stick figures clothed only below the waist in shaded skirt and trousers. The story which he based on this picture was a romantic one about two young adults in love and dancing.

8. M. D. was a 4½-year-old boy admitted to the Children's Ward from a foster home because he was destructive and a firesetter. He wet and soiled. He formed good relationships with adults and children and responded well to ward routines. His symptoms were considered to come out of an unresolved oedipal conflict mishandled by neurotic parents. M. D.'s drawings were straight-line scribbles to which a few little hooks and circles were affixed and identified as hat and boots, from which M. D. identified the scribble as "a cowboy." He made a story up about the cowboy chasing the bad guys and killing them.

9. D. D. was a 5-year-old girl admitted to the Children's Service at the request of a foster home agency because she was withdrawn, enuretic and negativistic in her current foster home. She was a very small, thin child with drooping upper eyelids, a protuberant abdomen and an unsteady gait. Her deep tendon reflexes were hyperactive. Intellectually she was alert, but emotionally she was withdrawn, almost apathetic. D. D. had living parents who were concerned about her welfare though unable to provide a home for her. Early history indicated slowness in motor maturation. D. D. had a positive blood and spinal fluid Wassermann. This, together with a history of parental lues, suggested the possibility of congenital lues in the child. She received a course of penicillin, after which her Wassermann turned negative. She responded well to ward routines, gained one third of her body weight, became emotionally lively and showed better motor coordination. Her drawings were of globules representing heads and from which extremities protruded. Eyes, nose and ears were drawn. The arms came out of the ears and the legs came out of the mouth. She made up wonderfully complex stories about little girls who could do magic and get all the ice-cream and toys they wanted. She loved an audience. Her stories, like those in the Arabian Nights, were evidently strung together to catch the listener's attention.

10. S. M. was a 5-year-old girl seen for six months for psychotherapy for a severe school phobia. She had extreme anxiety about separation from her mother in any situation. She was diagnosed as a severe anxiety neurosis. She was of superior intelligence. Her drawings of the human figure were extremely exact anatomically, in excellent form. There was a profusion of buttons on both male and female figures. The women's clothes were frilly, reflecting her own vanity about personal appearance. Her stories were constricted and very moralizing.

11. P. F. was a 5-year-old girl treated at the Bellevue Hospital Mental Hygiene Clinic for 1½ years in individual and group sessions because she pulled her hair out until she was nearly bald. She had severe anxiety about separation from her mother. She was of very superior intelligence. P. F.'s talk frequently was scattered to the point of incoherence. She had an introjected body alternately identified as the devil and her baby brother. She was preoccupied with body changes in pregnancy, in growth and maturation. She was very tall for her age and in treatment sessions liked to walk on her knees to make herself more like a baby. She refused to draw a human figure upon request. Most of her spontaneous drawings were of well-formed squares and diamonds worked into beautiful, highly intricate abstract patterns. Her spontaneous figure drawings were of men with no arms but well defined legs. There were all the facial features but no neck. They wore high hats. A spontaneous drawing of herself just after the DSS test was a carefully drawn scribble of loops within loops. Her title for the picture was "I'm mixed up." Her stories were all about bad mothers who left their babies or beat them or starved them. The babies grew up and then did the same to their mothers.

Discussion of Body-Image Constructs and Attempts to Correlate These with DSS Data. In the case of L. K., who made the most errors on the DSS test, it is interesting to note that there were few refusals. It is probable that the same anxiety that drove the child to seek bodily contact and reassurance about his identity also determined in part his need to respond and the number of errors he made, i.e. in order to keep the examiner near him, the child complied with the examiner's requests, but since his interest was only in the relationship to the examiner he made many errors. This does not explain why the errors were of displacement rather than of extinction. The drawing (fig. 1) gives evidence of ability to draw in good form. The drawing of a house upon request to draw a person may be interpreted as a denial of the child's basic problem of self-identification and relationship to others. The verbal identification of the picture as a "rocking horse" was regarded as an obscure association of the child's either to the concept house or to the concept of the doctor as someone on the ward who gives children things—bread and butter sandwiches and admission to the playroom where there was a rocking horse. The variations in shading and in forms of writing indicate the child's ambivalence and very uneven functioning. This child's anxiety was so severe and diffuse that it necessarily shows in all of his functions.

Comparing these results to those found with R. H. it can be seen that, though R. H. had fewer errors, he had an even higher percentage of displacement errors. His personality was of an entirely different construction. Though he was younger and less intelligent, he had a better developed ego and better defenses. Though both his drawings (figs. 2 and 3) are of the immature type related by Cohn to the rostral order of dominance he finds in DSS responses, the two drawings can be otherwise interpreted. In the first place, R. H.'s DSS responses did not demonstrate rostral dominance. Rather the hand stimuli were perceived as from the feet. Secondly, even if the DSS responses had confirmed rostral dominance, the drawings of a head by children as representative of the entire body need not necessarily be interpreted as evidence that the child perceives only his head and a few other parts any more than L. K.'s drawing of a house as a person indicates that he sees people as houses. It is known that

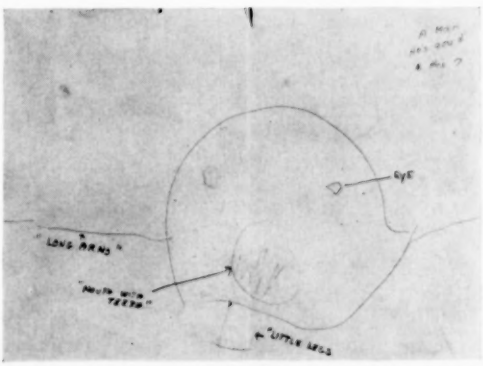

FIG. 2.

FIG. 3.

children do draw heads as representing the whole body (8) and that at about 3 to 4 years of age they begin to add extremities which at first come directly from the circular form representing the head. Only later do they draw bodies to which they attach the extremities. Necks and ears are the last details to be added ordinarily. It has been suggested that the reason for the progression is that the head, and particularly the mouth, are the most important aspects of the child's body in social relationships (sighting love objects, feeding) and the extremities come next (walking and holding on to love objects). Another explanation more satisfactory to the writer is that the child is able to draw swirling lines first and only later make straight lines which he uses to represent extremities and body (2). The reason this seems a more satisfactory explanation is that it has been the writer's experience that even the youngest and sickest children are aware of the drawing of a picture as a distinct motor and perceptual act involving representation of form which they sometimes cannot effect. If an adult draws only heads as a full representation of human form then there is obvious evidence of something wrong, if nothing more than refusal to comply with requests. If a child does the same thing it may mean nothing more than immaturity of motor or perceptual functioning as related to the act of graphic representation.

In the case of R. H. figure 2 was drawn first. In form it is the kind of drawing expected from a child of 3 to 4 years of age. There are extremities coming from the head and big teeth in the mouth. From this drawing R. H. elaborated a long story of an excessively virtuous "man" (aged 7) who was too good to be true, especially to his mother. Interestingly, this very good man had teeth and extended arms. The bad man (aged 8) of figure 3 was quite terrible to his mother. Though he had no teeth he was described as biting his mother and other people. However, in R. H.'s stories virtue always won out and the bad man was eaten up regularly by those he attacked. He was represented as having no extremities with which to contact the world for good or bad. The line coming out of the top of his head represents his hair. The shadowy lines in the background crossing the main figure are from an erased figure that was more mature in the sense that in it R. H. tried to make a body separate from the head but gave up and drew the "globule" or "raindrop" figure instead. This background figure is particularly important because it testifies to the child's ability to execute better form than he wishes to display. The final figure 3 is even more immature for his age than is figure 2, but because of the background figure it may be said that the immaturity of form represents regression due to anxiety about the content rather than simple immaturity of motor maturation.

The DSS protocols of both L. K. and R. H. show a high incidence of symmetry responses considered normal for children somewhat younger (4 to 5 years).

B. R., who had about the same number of DSS errors, was of an age when a drawing of a head from which extremities protrude would be an acceptable representation of the body. However, she drew scribbles from which by projection and confabulation she sought to suggest a whole body. Reference to tables 3 and 4 will show that she often showed the phenomenon of symmetry. This is common and considered normal at her age. However, when this is added to denial of laterality by displacement to a midline structure and to the

TABLE 4.—Summary of DSS and Body Image Data

Patient	Age	Extinction	Displacement	Refusal	Correct	No. of Chances	Per cent Correct	Per cent Displacement	Diagnosis	Drawings and Stories
L. K.	6	5	32	8	2	45	4.4	66.6	S	Unable to fantasy or draw a man; drew a "Rocking horse"—a house. Severe anxiety
R. H.	5½	3	28	0	5	37	13.5	78.3	NBD	Amorphous, amoeba-like heads representing conflicting moral aspects of self
B. R.	3½	1	16	7	4	27	14.8	55.5	S	Scribbles with projection and confabulation. Stories about bad mothers and big babies who punish mothers
B. H.	4	3	14	2	13	32	40.6	43.7	S	Egg with identifiable body parts inside. Snowman who melts
J. S.	5½	3	12	2	20	37	54.5	32.4	S	Rectangle topped by circle. No neck. Many buttons. No features but eyes. Stories about feeding children
J. N.	4	11	4	2	16	32	50	9.4	S	Circles but no squares. Stories denial fantasies about bigness, strength and freedom
M. S.	6	2	1	2	25	30	83.3	3.3	NBD	Well formed heads. Stick figures with shaded skirts and trousers. Stories of romantic love
M. D.	4½	0	0	2	35	37	94.6	0	NBD	Hooks and circles. Projects a cowboy by identifying parts as hat and boots. Cowboy represents good, chases bad guys and kills them
D. D.	5	1	0	2	29	32	90.6	0	NBD, lues Little's disease	Globules from which extremities extend. Stories in which all wishes are granted by magic
S. M.	5	0	0	2	35	37	94.6	0	Anxiety neurosis	Good form, much detail. Stories about domineering mothers and teachers who successfully bully children
P. F.	5	0	0	0	37	37	100	0	S	Self-portrait—loops within loops labeled "I'm all mixed up." Stories about mistreated babies who rebel

S = Schizophrenia
NBD = Neurotic Behavior Disorder

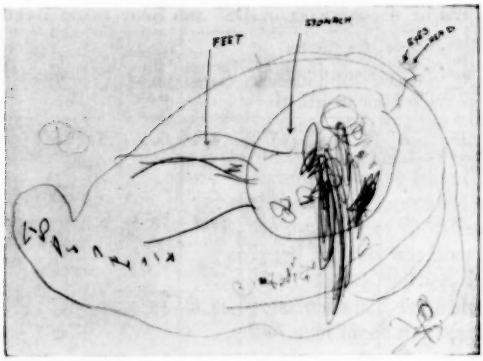

FIG. 4.

clinical finding of preoccupation with balancing her body in space and her clothing on her body, it is suggested that the high incidence of symmetry in this child's protocol may be invested with psychological meaning. In this sense, by analogy, the DSS protocol may be regarded as reflecting the child's body-image problem.

Of all the children, B. H. might be considered to have the most chaotic body image. Yet his DSS protocol does not reflect this specifically. On two occasions he referred to a stimulus as perceived in an object outside his body. In this case this might be related to his perception of himself as spread all over the ward, to his inability to perceive his own body boundaries. However, in DSS literature this phenomenon is known as exosomasthesia and is said to be common in normal children under the age of six years (6).

J. S.'s protocol is unremarkable except that in most of her displacement errors the stimulus was displaced to the left foot. In the one case where it was not, it was displaced to the left shoulder and symmetry was involved. If the response had come consecutively as they are recorded in the table, it might be thought that perseveration, at least on a verbal level, accounted for the phenomenon. However, reference to table 1 will show that the responses did not come consecutively in time and the probability of perseveration accounting for the phenomenon is reduced. J. S. was left-handed, left-eyed and left-footed; laterality displacements to the left may be accounted for partly on this basis.

J. N.'s drawings indicate motor immaturity in that he could not even begin to form angles. His stories indicated denial as his chief defense against anxiety. In this latter connection it is noted that of all the children J. N. showed the highest incidence of extinction, perhaps a "denial" of perception of body sensation.

M. S.' stories and drawings indicated sexual anxiety, as did his way of responding to the administration of the DSS test. However, the DSS protocol itself does not seem to reveal any of his bodily concern.

M. D.'s stories have much in common with R. H.'s in that they concern conflict about his personal worth. M. D.'s drawings have much in common with B. R.'s in that they are dif-

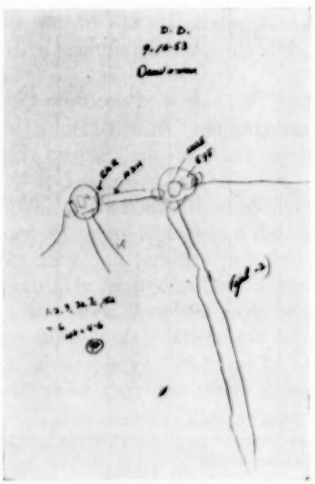

FIG. 5.

fuse scribbles in which body parts are identified largely by projection and confabulation. The DSS protocol reveals nothing to correlate with the projective data as with R. H. and M. D.

The last three children had almost perfect DSS protocols. Their body-image distortions were in no way reflected in their DSS responses.

Conclusions. 1) Disturbances in body image are not necessarily reflected in DSS responses. 2) In this series of cases when DSS responses were seen as reflecting body image problems, it was by the writer's resort to analogy, rendering the observations of doubtful value, i.e., high incidence of symmetry responses in a child preoccupied with balance as a defense against anxiety. 3) The localization of cutaneous perception is not intrinsically related to body image and should not be used as an indicator of body-image problems in children.

3. An Indirect Correlation of DSS Data with Body Image by Reason of Their Mutual Relatedness to Ego Maturation

Without resort to analogy DSS data may be correlated with body image data by means of their mutual relatedness to ego maturation in the following way: In this group of emotionally disturbed children a sub-group of six can be picked out, the first six in the tables. As was noted in Part 1, these children were the ones who had the greatest difficulty in understanding the test, who made the most errors and continued to make the most errors despite repeated trials. In these respects this subgroup of children differs from the other children in this group and from normal children; in these respects they resemble adults with an organic mental syndrome. In various papers, M. Bender has already suggested that the higher incidence of errors and the slowness of learning that are in the DSS test in normal children under six years are functions of their immaturity. Though the same kinds of errors are made by senile adults and adults of any age with an organic mental syndrome, he distinguishes the two groups (normal children vs. adults suffering from senility or specific organic mental syndromes) by noting that after a few trials normal children seem to grasp the idea of the test and make consistently fewer errors whereas the others do not seem to grasp the idea of the test and do not seem to learn by experience in any consistent way (1, 3).

The subgroup of children in this series who behaved as adults with an organic mental syndrome had no known specific organic neurological disorder although such was looked for. Many of them had some of the soft neurological signs described by Lauretta Bender as consistent with a diagnosis of childhood schizophrenia (4), although not all of them were diagnosed as such. Some of them had electroencephalographic patterns described as "immature for age" but otherwise not specific.

DSS literature indicates that allesthesia, exosomasthesia, symmetry, perseveration and many other specific errors in localization of cutaneous perception can be ascribed either to immaturity of the nervous system or its specific damage. It is only in the learning process per se that the two groups are distinguished. In the subgroup of patients currently discussed, in the absence of known nervous system damage, the unevenness in the learning process is ascribed to an even greater immaturity of nervous system development than the children's ages would warrant.

As already indicated, there was no correlation between DSS responses and body image data except by analogy. However, it was observed that no matter what the diagnosis, clinically the children of this subgroup had the most immature ego structures as indicated by overt anxiety, failure to distinguish their own body boundaries, and resort to the most immature defense against anxiety—denial. Where responses could be given by the children, Rorschach interpretations substantiated the clinical observation of weaker ego structure and defense mechanisms immature for the children's age and intelligence. This would suggest a correlation between the localization of cutaneous perception and either ego maturation or ego functioning.

DSS literature already indicates that though the correct localization of cutaneous perception is dependent upon a mature intact nervous system, it is independent of ego functioning even in severe emotional disorders involving varying degrees of ego destruction and known to affect sensation and learning in other situations. Patients with schizophrenia, manic-depressive psychosis or reactive depression ap-

proach the DSS test and give responses to it as do normal adults (1, 3). When the nervous system has matured its later damage interferes with the localization of cutaneous perception. However, once the ego has been formed, its later disintegration does not affect the localization of cutaneous perception. However, in children under the age of six years, whether normal or emotionally disturbed, no matter what psychological system is subscribed to the ego is not thought to be fully formed. Though psychotic children sometimes seem to undergo sudden regression and relative destruction of ego already formed equivalent to the experience of adult psychotics (and presumably not related to the localization of cutaneous perception just as ego disintegration is not related to the localization of cutaneous perception in the adult), in any child the fact of biological as well as psychological immaturity remains. What is meant is that in the subgroup of six children under discussion, though many of them demonstrated regressive phenomena indicating destruction of ego already formed, the correlation of incorrect localization of cutaneous perception is not to regressive phenomena but to failure of maturation of ego up to expectation for age level.

It is in this sense that DSS data might be related indirectly to body image data for much more often than not, it would be expected that disturbances in body image would coincide with failure of ego maturation to age level. Children who manifest body image disturbance associated with disturbances other than failure of ego maturation would not be expected to show specific difficulty in the localization of cutaneous perception because the intrinsic relationship is not between body image and the localization of cutaneous perception, but between the latter and ego formation.

To say this is to say something but not very much compared to what remains to be said, i.e., how they are related. To suggest that they are related in that both are functions of the maturation of the nervous system is not entirely to beg the question because the suggestion opens up practical lines of investigation. To suggest that ego formation is a function of the maturation of the nervous system is neither a new nor a subtle idea, and at some levels is self evident—the anencephalic monster, for example. What may be inferred from the suggestion is that many of the emotional disorders of childhood might be predicated upon faulty ego formations based not entirely upon unfortunate integrations with people important to the child but upon faulty or irregular maturation of the nervous system, rendering perception of reality for these children different from that of other children, and thus making integrations with other people difficult. Though this inference is subtler, less self-evident than the postulate upon which it is based, it is not new either and is in fact the basis for much current research in both childhood and adult schizophrenia. The advantage of the inference over the postulate is that it can be investigated and can be shown to be true or not true. For example, if it were true, it would be expected that children with mild to moderate organic brain disease might manifest faulty ego maturation as well as disturbances of body image and poor localization of cutaneous perception. A study of this sort has been under way for the past year and a comparison of those findings with the current findings may clarify some of the relationships between ego maturation and nervous system maturation.

Summary and Conclusions

Eleven emotionally disturbed children were examined with the purpose of finding out what is the pattern of perception of double simultaneous stimulation in these children and whether the DSS test can be used in any way as an indicator of body image problems in children. The pattern of perception found corroborated that found by M. Bender in normal children. Body image data and DSS data were not intrinsically related, but could be related by their mutual relation to ego formation. A method of further investigation of ego formation is described.

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INTRACEREBRAL VASCULAR DEPOSITS IN THE BASAL GANGLIA [1]

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Introduction

Basophilic (often called calcareous) deposits in the cerebral vessels are quite common and occur under a variety of conditions. Hurst (22) found deposits in the lenticular nuclei of 50 of 100 autopsy cases. Ostertag (37) found similar deposits in 72 of 100 autopsies, mainly in the lenticular and dentate nuclei. Both Hurst and Ostertag stated that small amounts of vascular deposits are present in these locations normally. Ostertag believed that he could find them in 100 per cent of cases if given the opportunity to cut his own sections. Strassman (54) also found these deposits "frequently" in 280 autopsy cases, and Wagner and Slager (59) found the same deposits in 68 per cent of 200 autopsy cases.

However, increased amounts of calcium-containing deposits which scratch the dissecting knife or become visible on skull roentgenograms are characteristically found only in certain conditions. These include old necrotic or necrobiotic processes, such as brain tumors, tuberculomas, and sites of old hemorrhages. Vasiliu's fifth case (56) should probably be classified in this group.

Another large group occurs secondary to cerebral damage, in chronic encephalitis, syphilis, tuberculosis, general paralysis, "Parkinsonism," subacute combined degeneration, progressive muscular atrophy, lead intoxication, carbon monoxide asphyxia, nitrous oxide poisoning and other intoxications (22). This group includes such reports as Vasiliu's fourth case (56), Volland's third case (57) and Lipschutz's case (30).

Deposits may also be found in vascular lesions, including angiomata, Sturge-Weber's disease, and, most frequently, cerebral atherosclerosis (3, 34, 54).

However, there is another group of cases where these deposits occur not in cerebral or vascular lesions but primarily in healthy tissues or vessels. One such condition is that of calcium metastasis, where osseous calcium is mobilized by primary or secondary bone involvement and then metastically deposited in soft tissue, including the brain. Schnabel's third case (47) belongs to this group. Another very interesting but heterogenous group of cases has been described as "idiopathic non-arteriosclerotic cerebral vascular calcifications." This has also been graced with the name of "Fahr's disease" (16), although it was probably first described by Pick in 1902 (38).

Intracerebral vascular calcifications may thus be classified as follows:

Cerebral Vascular Calcifications

I. Small amounts normally present (usually pseudocalcific deposits—see below)

II. Increased amounts
- A. Cerebral lesions
  1. Necrotic or necrobiotic processes: neoplasms, tuberculomas, old hemorrhages, etc.
  2. Infections: chronic encephalitis, syphilis, general paralysis, tuberculosis
  3. Toxins: lead, carbon monoxide, nitrous oxide
  4. Degenerative conditions: subacute combined degeneration, progressive muscular atrophy, "Parkinsonism"
- B. Vascular lesions
  1. Malformations: angiomata, Sturge-Weber's disease
  2. Arteriosclerosis
- C. No primary vascular or cerebral lesions
  1. Metastases: secondary to bone involvement, hyperparathyroidism
  2. Metabolic: pernicious anemia, hypoparathyroidism

A more detailed analysis is presented of the case reports in the last group together with arguments to consider it not as "idiopathic cerebral vascular calcification" or "Fahr's disease," but as a complication of hypoparathyroidism.

[1] Aided by a grant from the Sidney M. Cone Research Fund.

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TABLE 1.—DISTRIBUTION OF LESIONS REPORTED IN THE LITERATURE

Location	*Frequency of Report*	
Basal ganglia	21	
Lenticular nucleus		17
Globus pallidus		14
Putamen		12
Caudate nucleus		12
Cerebellum	18	
Dentate nucleus		17
Gray matter		9
White matter		3
Cortex	15	
Gray matter		11
White matter		11
Centrum semiovale	6	
Internal capsule	5	
Miscellaneous		
Ammon's horn	4	
Thalamus	4	
Red nucleus	3	
Substantia nigra	3	
Pons	2	
Pia arachnoid	1	

DISTRIBUTION

The distribution of the lesions is quite characteristic. Of the 23 reports, they were reported 21 times in the basal ganglia and 18 times in the cerebellum (4, 10, 13, 16, 19, 20, 21, 22, 26, 27, 36, 37, 39, 41, 44, 45, 47, 52, 54, 55, 57, 58, 61). The detailed analysis in table 1 indicates an area of predilection in the basal ganglia and dentate nucleus of the cerebellum. If the lesions are extensive, they then spread to the adjacent cortex, centrum semiovale, internal capsule, thalamus, and midbrain in that frequency.

HISTOLOGY

There is excellent agreement among 23 authors (4, 10, 13, 16, 19, 20, 21, 25-27, 32, 36, 37, 40, 41, 44, 45, 47, 54, 57, 58, 60, 61) on the histologic appearance of these lesions. The deposits occur in healthy vessels without evidence of preceding vascular lesions. Characteristically, the deposits are found as small basophilic granules around capillaries and in the media, adventitia, and perivascular spaces of the smaller arterioles. Most authors report involvement of the veins as well, although sometimes less severely. Some remark that with heavy involvement it is impossible to differentiate veins from arteries. The vascular endothelium is spared. As these deposits progress, i.e., as the examiner proceeds from the periphery to the center of a lesion, these small, fine, bead-like or sand-like granules coalesce into rings, plates, and sheaths and eventually may form solid perivascular tubes which project above the surface and on cutting, scratch the knife. By thus coalescing, larger concrements are formed; often they show concentric rings. Still larger, they become mulberry-shaped, or coralliform, and eventually they can be seen as microscopic "brain stones." Occlusion of the vessel occurs only with massive deposits. Free in the tissues, these concretions occur less frequently and only with massive involvement. Only 4 (26, 41, 45, 61) of 23 authors report deposits similar to the vascular ones in and around the nerve cells.

In the parenchyma adjacent to these lesions, nerve cell degeneration or glial reactions are minimal and occur only secondary to vascular occlusion by massive deposits. Chavany and co-workers (10) and Környey and Mattyus (27) report an abnormal number of dilated veins, the latter suggesting they may be tremendously dilated capillaries compensating for the impaired circulation. Wagner, Slager, and Tucker (58) made a similar suggestion.

HISTOCHEMISTRY

Recognized by their dark-blue to black color with hematoxylin and eosin stains, the deposits were believed to be calcium. However, it soon became apparent that this staining reaction was no proof of the presence of calcium. Pick (39), in reporting his first classical cases, found a positive von Kossa stain for calcium as well as Berlin blue for iron. Both staining reactions became negative after decalcification. Bassoe and Hassin (4) pointed out that there was a ground substance which retained its dark staining qualities with hematoxylin and Nissl stains after decalcification and called this pseudocalcium. They insisted von Kossa's reaction was negative.

Since then, various investigators have shown that there is a colloidal albuminoid ground substance which continues to stain darkly with

hemotoxylin and Nissl stains before and after decalcification. This deposit gives a negative reaction with stains for fat (4, 13, 20, 47), amyloid (13, 25, 37, 47) or glycogen (37, 60). However, a pale yellow stain with Lugol's solution, suggesting a protein, has been reported by one observer (45).

Although early observers stated categorically that calcium reactions (von Kossa, Roehl, Fischler) and iron reactions (Turnbull blue, Prussian blue, Berlin blue) were either present or absent, this was soon found to depend on the size of the deposits. Thus, very small and minimal deposits were often negative for both calcium and iron. In the older, i.e., denser, deposits first the iron reaction, and then slightly later the calcium reaction became positive. This agrees with the observations of Strassman (54) who, when excluding arteriosclerosis, found iron in many of his 280 cases but calcium in only 11, as well as with those of Hurst (22), who found iron but no calcium. Moulder and Denst (36) similarly found iron but no calcium histologically and thought that calcium would have deposited had the patient lived longer.

These observations, based on histochemical studies, are strengthened by an analysis of the reported cases of postoperative hypoparathyroidism, where the date of onset of the disease can be determined. In table 2 it is seen that histologically the albuminoid deposits appear in about 9 years, contain iron after 12 years, and become calcified and visible on skull roetgenograms in about 24 years.

Chemical analysis of the brain of a patient with hypoparathyroidism of 9 years' duration showed a normal calcium content of the dried brain (55). Other analyses of more advanced lesions have shown a calcium content of a wet fresh piece of caudate nucleus of 9.23 per cent with a control content of 0.03 to 0.01 per cent (45), or of a fixed lenticular nucleus of 0.14 per cent with a control of 0.003 per cent (13). The formation of gas with acids was reported by four (15, 26, 27, 45) authors and denied by two (4, 37), and the characteristic gypsum crystal formation ($CaSO_4$) was reported by four (15, 22, 27, 45) of six observers. Again, one (45) finds these reactions absent in smaller deposits but present in larger ones.

Pathologically, this condition thus emerges as an entity with a characteristic histologic lesion, certain areas of predilection, and a definite histochemical reaction. Clinically and etiologically, however, there is much confusion.

Clinical Picture

Until 1929 the diagnosis was made only at autopsy. In 1929 Geyelin and Penfield (19) took roentgenograms and found bilateral cerebral calcification in a father and 4 of his children. Although the lesions were not in the cortex, a biopsy specimen showed the typical histologic lesion. All 5 of the patients had

TABLE 2.—Reported Cases of Postoperative Hypoparathyroidism. Appearance Time of the Constituents of the Abnormal Deposits

Time Postoperatively	*Microscopic Albuminoid*	*Microscopic Iron*	*Microscopic Calcium*	*Roentgenographic Calcium*	*Reference*
6 weeks	Absent		Absent		37
¼ year	Absent		Absent		37
2 years				Absent	29
7 years				Absent	23
9 years	Present	Absent	Absent	Absent	55
12 years	Present	Present	Normal limits		37
13 years				Absent	43
23 years				Absent	29
24 years				Present	48
24 years	Present	Present	Present	Present	25
38 years	Normal	Normal	Normal		46
40 years	Present	Present	Present	Present	58

TABLE 3.—Reported Cases of Suggestive Hypoparathyroidism. Composite of Clinical Features

SUGGESTIVE HYPOPARATHYROIDISM

	REFERENCE	3 '03	13 1929		7 1922	4 1904	16 1931	21 1936	22 1938	43 1949	46 1950	9 1923	19 1935	2 '02	8 1922	15 1930
	AGE	37	3½	2½	29	24	42	54	15	22	47	45	62	32	42		55
HYPOPARATHYROIDISM	SERUM CALCIUM								9.0	11.9				CSF 9.4			
	TETANY	+		+	+	+	+		+		+				+	+	+ CRISIS
	CARPO-PEDAL SPASM			+	+					+							+
	MUSCLE IRRITABILITY				+	+			+						·		
	CHVOSTEC			+	+	+	+										
	CATARACTS	+			+		+			+					+		
	MISCELLANEOUS							IMPROVED WITH CALCIUM THERAPY		TREMBLING CONTRACTURES	TEETH FELL OUT	CONTRACTURE FINGERS	TWITCHES FIBRILLATIONS				
	PARATHYROIDS AT AUTOPSY		ONLY 2		ONLY 2		ONLY 2	NORMAL	NORMAL								
	EPILEPSY				+	+	+	+	+	+	+	+	+				
	MENTAL DETERIORATION	+	+	+	+	+	+	+	+		+	+	+				
	FAMILIAL			0 FAMILIES 8 PARENTS	7 PARENTS 8 SIBS.							+ 1 SIB.	+ 1 SIB.				
	OTHER ENDOCRINE DISTURBANCES		MONGOLIAN IDIOCY THYROID DEFICIENCY	ADDISON'S DISEASE	DERMOID CYSTOVARY THYROID STRUMA+ DEFICIENCY												
DIAGNOSIS	SKULL X-RAYS								+	+			+				
	AUTOPSY	+	+	+	+	+	+	+ INCOMPLETE	+	+	+	0		+	+	+	+
	ALIVE												+				
	PARAMIDAL AND EXTRAPYRAMIDAL SIGNS			LEFT BABINSKI RIGIDITY			INVOLUNTARY MOVEMENTS	MOTOR EXCITABILITY		BILATERAL BABINSKI			SPASTICITY RIGIDITY				
	MISCELLANEOUS				CONGENITAL ANOMALIES TOES, EARLOBES				CRANIECTOMY CYST CAVUM SEPTUM PELLUCIDUM AND CAVUM VERGAE								COMA OF UNDETERMINED ETIOLOGY

epilepsy, and 3 of the 4 survivors showed mental retardation. Since then, certain clinical signs and symptoms, together with bilateral cerebral calcification on skull roentgenograms, have led other authors to make the diagnosis of "Fahr's disease" in the living patient. In some, a biopsy obtained at craniotomy confirmed this diagnosis.

As already reported by Ostertag (37), many of these cases seem to occur with endocrine disturbances, mainly tetany. A review of the literature reveals 31 cases of clearcut hypoparathyroidism (see tables 4 and 5). Seventeen more cases had suggestions of hypoparathyroid deficiency with symptoms varying from tetany-like spasms, cataracts, carpo-pedal spasm, muscular contracture, twitches, and fibrillations, to the falling out of teeth, or response of convulsions to calcium therapy even though the serum calcium level was within normal limits (see table 3). Six cases have other endocrine disturbances as well, such as Addison's disease, myxedema, ovarian tumors, diabetes insipidus, dwarfism, etc. Two of these fall into the group of pseudohypoparathyroidism, one into idiopathic hypoparathyroidism, and three into the group of suggestive hypoparathyroidism.

In accepting the diagnosis of hypoparathyroidism, a report of the serum calcium level was considered necessary for proof. An exception was made in the cases of Camp (8), who summarized his findings, of Scheinker (44), who seemed to have omitted reporting it, of Berardinelli (5) who, with prohibition of venipuncture by the child's parents, reports a urine Sulkowitch test instead, of Ostertag (37), who gave no details of his case of postoperative hypoparathyroidism, and of Sugar (55), who gave anatomical rather than chemical proof of the state of hypoparathyroidism.

Anatomical proof of hypoparathyroidism is not frequently given. Of the five reported cases of postoperative hypoparathyroidism, besides Sugar (55), only Wagner, Slager, and

TABLE 4.—Reported Cases of Idiopathic Hypoparathyroidism. Composite of Clinical Features

IDIOPATHIC HYPOPARATHYROIDISM

	REFERENCE	24 1939		26 1939	37 1946		50 1951	52 1951	36 1946	28 1940			49 1951	51 1951	23 1939	31 1942	29 1940	55 1952	40 1948
	AGE	14	13	28	19	25	43	37	10	17	2	9	44	17	16	21	46	55	
HYPOPARATHYROIDISM	SERUM CALCIUM	6.0	6.8	4.2	4.5	8.8	6.2	4.3	7.0	6.0	6.5	7.6	6.8	6.3	6.1	8.0		7.2	
	SERUM PHOSPHORUS	7.2	7.2	5.2	9.6	4.9	6.3	7.9	6.4				3.96	9.1	10.2	6.4		5.3	
	SERUM ALK. PHOSPHATASE	18	0.4		5.6 BOD. U.	5.3	7.9 ROB.U.						18	33 K.A.U.	15.4 BOD.U.			4.8 K.A.U.	
	TETANY*						+										+		++++
	CARPO-PEDAL SPASM				+		+		+				+				+	+	
	MUSCLE IRRITABILITY													+			+		
	CHVOSTEC	0	0		+	0		+	+				+	+		+	+		
	CATARACTS			+	+		0	+	0				+	0		+	+	+	
	PARATHYROIDS AT AUTOPSY								ABSENT										
	EPILEPSY	+	+	+	+	+	+		+	+	+	+							
	MENTAL DETERIORATION	+ I.Q. 42	+ I.Q. 73	+ I.Q. 60	+ I.Q. 70	+	+	+ CONFUSION	+ I.Q.- 80	+	+	+	+						
	FAMILIAL	0 PAR. 4 SIB.	0 PAR. 1 SIB.		0 PAR. 5 SIB.		0 PAR. 1 SIB.					+ PAR. 1 SIB.	+ PAR. 4 SIB.	+ 18 CHOREA IS L.+W.	0 PAR. 4 SIB.				
	OTHER ENDOCRINE DISTURBANCES								ADDISON'S DISEASE										
DIAGNOSIS	SKULL X-RAYS	+	+	+	+	+	+	+	+	+	+	+	+	+ CHOROID PLEXUS	+ P	+		+	++++
	AUTOPSY								0						0	+	+		
	ALIVE	+	+	+	+	+	+	+		+	+	+	+	+				+	
	PYRAMIDAL AND EXTRAPYRAMIDAL SIGNS						LEFT HEMI-PARESIS	+ HOFFMAN BI-LATERAL			RT. BABINSKI PARALYSIS RT. ARM								
	MISCELLANEOUS				ANGIOMA RIGHT ELBOW					HYDRO-CEPHAL	CLONIC TONIC CRAMPS BIRTH ASPHYXIA						SYPHILIS GLIO-BLASTOMA MULTI-FORME		

Tucker (58) reported the anatomical absence of the parathyroid glands at autopsy, while Ostertag (37) does not mention them and the other two cases were alive at the time of the report. Of the 21 reports of idiopathic hypoparathyroidism only Leonard (28) reports the parathyroid glands as absent. In the suggestive group three authors (37, 45, 61) report being able to find only two, while two (20, 31) report the glands normal at autopsy.

There remains a group of 20 patients whose main symptoms are epilepsy and mental deterioration or retardation. None of them shows the classical symptoms and signs of hypoparathyroidism. They are summarized in table 6. A comparison with the other cases shows, however, that epilepsy and mental retardation or deterioration are frequently found, occurring in 32 of the 47 cases of hypoparathyroidism or in 53 of the 68 reported cases.

A familial tendency has also been reported by some authors, and some have even suggested that the group may be divided into those with endocrine disturbances and those with epilepsy, mental retardation, and a familial incidence (6, 24). It has already been pointed out that the epilepsy and mental retardation occur frequently in the hypoparathyroidism group, being found in 32 of the 47 cases (see tables 4 and 5). A similar overlap is found for familial incidence. Although no familial tendency is found in the 5 cases of pseudohypoparathyroidism, 2 suggestive and 2 idiopathic hypoparathyroid cases show such an incidence. In the group of unknown etiology, 12 of the 20 have a familial history (table 6).

The average age of the cases reported also suggests such a dichotomy. Whereas the average age of the cases of hypoparathyroidism and pseudohypoparathyroidism is 24.5 and 28

TABLE 5.—Reported Cases of Pseudohypoparathyroidism and Reported Cases of Post-thyroidectomy Hypoparathyroidism. Composite of Clinical Features

		Pseudohypoparathyroidism					Post-thyroidectomy hypoparathyroidism				
	Reference	49 1951	35 1945	45 1949	53 1951	54 1952	27 1939	38 1947	58 1953	59 1954	13 1929
	Age	18	33	49	16½	24	56	42	36	53	52
Hypoparathyroidism	Serum calcium	6.6	4.6	6.8	Urine Sulkowitch neg.	5.7	7.22	5.5		5.7	
	Serum phosphorus	6.8	5.3	4.5		6.8	4.68	6.6		8.2	
	Serum alk. phosphatase			1.8 BOD.U.		6.1 BOD.U.				4.2 BOD.U.	
	Tetany	+					0			+	+
	Carpo-pedal spasm					Cramps		+		+	
	Chvostec	+		0	+	+		+		+	
	Cataracts			+				+	+	0	
	Parathyroids at autopsy								Absent	Absent	
	Years post-operative						24	24	9	40	12
	Epilepsy		+	+	+	+			+	+	
	Mental deterioration				0 "bright"	+ I.Q. 57	+	+		+	
	Familial				0 parents 1 sib						
	Other endocrine disturbances				Diabetes insipidus Decr. glucose tolerance	Large head Frontal bossing Dwarfed					
Diagnosis	Skull x-ray	+	+	+	+	+	+	+	0	+	
	Autopsy						Biopsy		+	+	+
	Alive	+	+	+	+	+	+	+			
	Pyramidal and extrapyramidal signs			Tremor hands			Temor hands and tongue		D.T.R.'s hypoactive + Rhomberg dysynergia	D.T.R.'s hypoactive pill-rolling tremor	
	Miscellaneous			Subcutaneous calcification		Retarded tooth eruption			Mumbling stiffening staring	Craniectomy	

years respectively, that of the group of suggestive hypoparathyroidism is 36.2 years, and of the group of unknown etiology 34.5 (38.4) years. The overall average of 31.3 years certainly strikingly suggests the improbability of an arteriosclerotic influence.

Etiology

Etiological speculations have been of much interest ever since Pick's first report. Pick thought the cerebral calcification in the basal ganglia caused the tetany by producing cerebral ischemia. Scheinker (44) also seemed to favor this central cause of tetany, postulating that the calcification damages the pallidodentate system which controls muscle tone, the tetany being a release phenomenon caused by this damage. Guillain, Bertrand, and Rouquès (20) also tend toward this interpretation. Winer (62) offers a similar argument in a case of traumatic encephalopathy. He postulated that damage to the hypothalamus, as evidenced by an enlarged third ventricle on ventriculography, produced a state of hypoparathyroidism. However, such a hypophyseal-parathyroid control mechanism is denied by Albright and Reifenstein (1). Sugar (55) believes that Winer's case could also be interpreted by reversing the cause and effect.

Only two authors advocate a vascular disease as the cause of the condition. Geyelin and Penfield (19) thought that the primary process was an endarteritis with secondary calcification of the vascular lesions. Környey and Mattyus (27) believed that there was a metabolic disturbance inside the vessel wall, the colloid being deposited either simultaneously with this condition or subsequent to it.

TABLE 6.—Reported Cases of Obscure Etiology. Composite of Clinical Features

"OBSCURE" ETIOLOGY

REFERENCE	30 1940		14 1929					18 1935			56 1952	61 1954		6 1921	28 1940	33 '43	44 '49	47 1950	50 1951	5 1952
AGE	51	56					FATHER	28	27	21	60	2½	2½	32	41	24	57	27	37	47
HYPOPARATHYROIDISM: SERUM CALCIUM				9.8	NOR.			10.0	10.5	10.7	9.3	11.4	NORMAL			10.1				
HYPOPARATHYROIDISM: SERUM PHOSPHORUS											3.4	7.04								
HYPOPARATHYROIDISM: OTHER											ALK. PHOS. 11.5									
HYPOPARATHYROIDISM: PARATHYROIDS AT AUTOPSY												HYPER-PLASTIC								
EPILEPSY	+		+	+	+	+	+	+		+		+	+	+	+	+	+	+	+	
MENTAL DETERIORATION	+	+		+	+	+		+	+	+	+ I.Q.-79	+	+	+	+	+	+			+
FAMILIAL	0 PARENT 5 SIB.	+ MOTHER 1 SIB.	+ FATHER AND 4 CHILDREN					+ 3 SIBLINGS			+ 3 CHILD. 0 A. SIB.	+ 2 SIBLINGS								
OTHER ENDOCRINE DISTURBANCES												ATHOPHY TESTES THYROID & THYMUS								
DIAGNOSIS: SKULL X-RAYS			+	+	+	+	+	+	+	+	+	0	0		+	+		0	+	
DIAGNOSIS: AUTOPSY	+	+	+ BIOPSY									+	+	+		+	+	+		+
DIAGNOSIS: ALIVE				+	+	+	+	+	+	+	+				+				+	
PARAMIDAL AND EXTRAPYRAMIDAL SIGNS	SPASM LOWER EXTREM.	RT. HEMIPARESIS WITH CLONUS							LEFT BABINSKI		SLIGHT SPASTICITY, WEAK LEGS	SPASTIC LEFT ARM; RT. SIDED PARALYSIS	D.T.R.'S HYPER-ACTIVE		CLONIC TONIC CRAMPS			LEFT SPASTICITY	DRAGS FEET	
MISCELLANEOUS			MULTIPLE CALCIFICATION TUMORS OF BRAIN	BIOPSY OCC. LOBE					OLIGOPHRENIA			HYDRONEPHROSIS AMYLOIDOSIS SPLEEN	POOR RENAL FUNCTION	3 CRANIECTOMIES			POSTMORTEM	COMA, DECEREBRATE RIGIDITY, SCHIZOPHRENIA + S.T.S.	ANGIOMA RT. ELBOW	

Secondary changes resulted in hypertrophic hyperplastic collateral circulation with obliteration and recanalization.

The remaining authors seem to favor the view that there is a more general, systematic or local, metabolic disturbance. Early writers, such as Bassoe and Hassin (4), stated this view only in very general terms, saying that calcification was secondary to a metabolic disorder of the tissue fluids. Ostertag (37) somewhat clarified this concept, postulating that the deposits occurred at the junction of healthy and diseased areas, i.e., at the border of changed metabolism. He thought that the substances here precipitated from the tissue fluids could not be removed. Since everyone has temporary metabolic disturbances, such deposits could always be found, and would be more massive with more prolonged metabolic disorders. As an explanation for the area of predilection of these deposits, he proposed that they occurred in areas which had a specially labile metabolism—the pallidum and dentate nucleus. He thought the albuminoid precipitated in a similar way to amyloid bodies. Since these areas are especially rich in iron, the deposits became impregnated with iron. In support of this, he cited a 2½-year-old child with extensive deposits but very little iron—the deposits having occurred at an age when the pallidum is still poor in iron. Since these deposits would not reimbibe iron once they had been deironized, he argued the iron was incorporated during formation of the deposits and not absorbed postmortem. Környey and Mattyus (27), however, reported that iron was reimbibed. As to the calcium, Ostertag believed this appeared only after the deposits had become so massive as to interfere with the circulation, and hence, tissue nutrition. Calcification then occurred by the same means by which any necrotic tissue may become calcified and was possibly aided by a disturbance in calcium metabolism, since the deposits were found so frequently in increased amounts in tetany. Scheinker's (44) explanation is more detailed but no more clarifying, postulating a parathyroid insufficiency specifically. This he believes to cause a disturbance in albumin metabolism leading to the formation of toxic amines. These amines, by alkalinizing the blood and decreasing the calcium iron con-

centration, then rob the tissues of calcium which is precipitated. However, this gives no explanation of the albuminoid deposits. Albright and Reifenstein (1) believe that the state of hypoparathyroidism entails a tendency toward supersaturation with calcium phosphates and hence a greater tendency toward extraskeletal calcium deposits.

Recent authors seem preponderantly in favor of specifying hypoparathyroidism as the metabolic disturbance involved in this process. This is evident from tables 3, 4 and 5 discussed above. Albright and Reifenstein (1) state that epilepsy and mental deficiency may be the only presenting symptoms of hypoparathyroidism, and an article by Levy (29) in 1947 specifically stresses these non-classical symptoms and signs of hypoparathyroidism. Of even greater interest is a recent review article by Sugar (55), reporting that hypoparathyroidism may exist without hypocalcemia, especially if there is a familial tendency. Likewise, epilepsy, mental deficiency, papilledema, pseudotumor cerebri, and extra-pyramidal symptoms are frequently the presenting complaints in this condition instead of the classic tetanic convulsions, hypocalcemia, Chvostec sign, and cataracts. Cambrier (7) also supports this view, questioning whether there may not be familial episodes of transitory hypoparathyroidism in childhood in these familial cases. Consequently, the cases of table 6 with epileptoid convulsions, mental retardation or deterioration, and a familial tendency are very probably also related to a state of hypoparathyroidism.

Summary

A classification of cerebral vascular calcification is presented with a review of the literature concerning deposition in otherwise healthy vessels and normal cerebral tissue.

Pathologically, these lesions are very characteristic, appearing first as small basophilic granules around capillaries, in the media and adventitia of arterioles, and less frequently around veins. These granules then coalesce into larger coralliform or mulberry-shaped masses and finally form almost solid perivascular sheaths. The site of predilection of these deposits is in the basal ganglia and dentate nucleus. No satisfactory explanation for this predilection is found in the literature.

Chemically, these grandular deposits consist of a basophilic colloid protein substrate neither hyaline nor amyloid which becomes secondarily impregnated first with iron and then with calcium. The final identification of this substance has not yet been made.

Clinically, the case reports fall into 2 groups, one with classical symptoms of hypoparathyroidism, and the other with a familial tendency, epilepsy, and mental retardation or deterioration. Arguments are presented that, in this latter group as well as in the former, the cerebral lesions are probably related to a parathyroid deficiency.

Conclusion

The literature on intracerebral vascular calcification has been reviewed with special emphasis on its relationship to hypoparathyroidism.

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THE PSYCHOLOGIC RESPONSE TO ESTROGENIC THERAPY IN TURNER'S SYNDROME (OVARIAN AGENESIS)

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In 1938, Turner first described the syndrome of webbing of the neck, deformity of the elbow (cubitus valgus), short stature and osseous and sexual infantilism in women (4). His patients had either complete absence of, or markedly infantile ovaries and uteri. Subsequent reports have confirmed Turner's original findings and have demonstrated the total absence or retarded development of the internal sex organs by exploratory laparotomy, peritoneoscopy, biopsy examinations, and qualitative measures of excreted urinary gonadotropins (1, 3, 5, 6). In several of the cases reported, marked psychological benefits were observed when increased breast development, growth of pubic and axillary hair, and maturation of the external genitalia occurred after utilizing estrogenic replacement therapy. In some instances regular periodic bleeding could be obtained through cyclic administration of the estrogenic hormone. Undoubtedly, these patients felt happier as they began to regard themselves as normally acting and appearing women; however, none of these cases were studied from a psychiatric-psychologic orientation, so it is difficult to say more specifically why they felt better, although the change in body appearance and function cannot be minimized. The author had an opportunity to study a case of Turner's syndrome prior to and after the start of estrogen therapy. Unfortunately the patient's mother prohibited continuation of further psychiatric interviews, and contact with the patient was broken. The material reported here is of the psychiatric evaluations made initially and of findings after the start of oral estrogens.

The patient, a 27-year-old, white, single female, was referred for psychiatric consultation because she felt "inferior" as a result of her stature (4′7″), because of her inability to keep and hold a job, and because of her difficulties with her mother. The latter was described as a domineering, discouraging, depreciating, volatile person who frequently screamed at the patient and never expressed confidence in the patient's ability to do anything. The patient would usually attempt to restrain herself from being hostile to her mother, although on several occasions violent arguments occurred—after which patient felt quite guilty. In an interview with the author, the mother expressed and revealed enough of herself to indicate that the patient's appraisal of her was quite accurate. Because the father was continuously preoccupied with his business activities, his contacts with the patient were limited and frequently consisted of unfavorable comparisons of her with her female cousins. In addition, his treatment of her was usually infantilizing. This caused much resentment, as it made the patient only more aware of her difference from other women. There are two older married brothers who have children of their own. The patient was intensely jealous of the oldest brother, as he was the mother's favorite child. Until the other brother married, the patient "idolized" him, but after his marriage she resented him. Noteworthy was her marked jealousy of her sisters-in-law, whom she continually accused of being poor mothers. Identification with her nieces and nephews was most apparent. Her profound irritation with her sisters-in-law stemmed from hostility transferred from her own mother who mistreated her, and from her jealousy of them as adequate women. Patient never did well in school and could not finish high school. She had a multitude of jobs, but could never get along with fellow employees or her superiors. She had never had a boy-friend, and went out rarely with girls or boys. Her social activities were mainly solitary or familial gatherings. She read novels, and was interested in dramatics, where she could fantasy herself in various situations. Although she had had no sexual experience, she occasionally masturbated as it "felt good"—at no time did she have an orgasm, however. At age 15, an endocrinologist administered replacement hormonal therapy for a short time. When this was stopped, she had a "period." This thrilled her but, due to her mother's interference, contact with this phy-

sician was broken. She expressed the wish to menstruate, be taller, and have large breasts and more pubic and axillary hair. She also was concerned about her weight (120 lb.). She felt she could not reduce as she had to eat excessively when she felt "miserable and bored." She was ashamed at her inability to hold a job and so being forced to rely on her parents for all financial as well as social gratifications. When she became depressed she would either withdraw and fantasy suicide, or go and play with her nieces and nephews.

Patient was seen weekly for three months. In the early interviews she was somewhat anxious, frequently giggled and laughed in a child-like fashion, and was most reluctant to talk of her hostile and jealous feelings. Gradually she expressed her resentments more openly, but with some self reproach. Her shrill, high-pitched voice and bodily appearance made her seem much younger than her chronological age. There was no evidence of psychotic thinking; she expressed her ideas succinctly and seemed to be of average intelligence.

Physical and gynecological examination revealed the presence of a high arched palate, webbing of the neck, cubitus valgus, pes cavus and strabismus. The breasts were infantile and there was only slight evidence of axillary and pubic hair. The vagina was red and smooth. A tiny cervix protruded into the vault of the vagina, and the body of the uterus was not palpated. A transabdominal pneumoperitoneal x-ray examination, performed when the patient was 20 years old, indicated the complete absence of the left ovary and the appearance of a tiny bud in place of the right one. The uterus, outlined by gas, was extremely small. After the gynecological consultation, patient was placed on 5 mg. Premarin daily.

About three weeks following the start of estrogen therapy, patient began to notice an increase in vaginal secretions and sensations. A marked change occurred psychologically at the same time. She became more active socially in terms of visiting friends and going to movies and the theater. She proceeded to get a job, which she kept for a short time; she immediately found another, at which she is still working a year after regular contact with me was interrupted. Her sexual activity increased markedly. She masturbated frequently to the point of orgasm and began to have sexual fantasies about the author and various other men with whom she had contact. Her weight began to decrease and she refused to be dominated by her mother. Frequent arguments with mother resulted initially in parental refusal to pay her psychiatric fees. She paid for these herself with her earnings. Finally mother became so upset she absolutely prohibited psychiatric interviews and the use of oral estrogenic material. Consultation with the parents did not alter the mother's threat to forcibly evict the patient if she continued on the hormonal-psychiatric regime. As a result of this stand of the parents, psychiatric interviews were terminated. Since the mother had acted in a similar fashion earlier with the endocrinologist it is evident that she wishes her daughter's condition to remain unaltered.

Just before interruption, psychological tests were administered to the patient. These revealed an unusual amount of sexually toned material without any of the situational embarrassment which customarily accompanies such responses, and although she verbalized feelings of embarrassment with regards to her Rorschach percepts, she actually displayed no overt behavioral signs to corroborate this. However in the Thematic Apperception Test there was evidence of a moralistic restraint operative in the over-abundant sexual responses.

Recent follow-up (one year after interruption), revealed that the patient still has the job she was on at the time of termination, that she is still on hormonal therapy despite mother's disapproval (she buys her own medication), and that she continues to be very sexually stimulated. Her fear and guilt resulting from hostility to her mother are still very evident.

Benedek and Rubenstein (2) have shown, in their comprehensive psychosomatic study of the psychosexual functions in women, that the sexual cycle in women consists of a parallel and correlated hormonal and emotional cycle—the emotional cycle varying with the changes in the endocrine system. They found that "the estrogenic phase of the cycle corresponds to an emotional condition characterized by active heterosexual libido, that is, heterosexual tendency is correlated with estrogen production."

These results were obtained from a study of physiologically normal women who had regular menstrual cycles. These findings dealing with the estrogen phase of the cycle were directly confirmed in the patient discussed here. Since she had no functioning ovaries, she had no hormonal cycle (estrogen-progesterone). With the administration of replacement estrogenic substance, her emotional and psychological functioning showed marked changes in the direction noted by Benedek and Rubenstein for the estrogen phase. The patient became increasingly interested in heterosexual activities, began to masturbate and fantasy heterosexual encounters, got a job which she has now kept for the longest time she has ever worked in one situation, and become more socially active. Concomitantly she felt somewhat less insecure with regard to her mother. When she became more aggressive, her mother deliberately forced her to stop psychiatric interviews—although patient has refused to discontinue estrogen medication, even though her mother has insisted that she do this also. Her severe psychological problem in terms of her mother's attitude toward her, and her awareness of being physically different from other women, are undeniable; but the primary purpose of this communication is to note the dramatic response to replacement estrogen in a woman without ovaries. This response is very similar to what has been found in women with intact ovaries in the estrogenic phase of their hormonal cycle (2). One cannot eliminate, in the above case study, the effect of transference. The patient was coming to a situation where she was accepted and not criticized, and where her therapeutic motives and expectations were in strong evidence. She was seeing a male therapist and her relationship with her father had been somewhat better than with her mother. However, the rapid and marked changes following the start of the hormone seem to indicate that this is the important determinant of her behavior. Again her psychological expectation involving the hormone usage cannot be totally neglected from consideration. The fact however that she could relinquish seeing the psychiatrist, but not the continued use of the estrogen, speaks for her awareness of it as the important element in her changed condition. That she has continued to keep her job and be active now for one year after cessation of psychiatric interviews, during which time she has been on medication, speaks again in favor of the point of view emphasized here. It should be noted that while the patient was being seen she spoke of changes in her genitalia (discharge, "warm feelings"), but no overt or gross alterations were observed in the genitalia, or in the other parts of her body by her. Thus her response was not related to superficial changes in her body as a result of hormonal treatment, an explanation stressed by authors cited previously, but was due to the psychological response resulting from hormonal treatment.

Conclusion

Psychological changes, similar to those found in the estrogenic phase of the ovulatory cycle in physiologically intact women, were observed in a case of ovarian agenesis after estrogen replacement medication was utilized.

I wish to thank Dr. Alex S. Tulsky, and the Department for Research in Human Reproduction, Michael Reese Hospital, for making available to me their gynecological and laboratory findings in this patient.

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SOMATO-PSYCHOTHERAPEUTIC APPROACH TO LONG-TERM SCHIZOPHRENIC PATIENTS

A Demonstration Program [1]

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This is the first report of an investigation into the effects of a comprehensive program of modern psychiatric treatment in relieving the symptoms of long-term schizophrenic patients. It describes results obtained during the first 15 weeks of study. A variety of treatment modalities was included with special emphasis upon group psychotherapy and electroshock therapy.

This program was also undertaken to demonstrate to the hospital community the potentialities for improvement of older "chronic" mental patients with functional psychoses: patients whose prognosis is most often viewed with extreme pessimism.

Albany Veterans Administration Hospital is a general medical, surgical, and neuropsychiatric hospital. The Neuropsychiatry Service cares for mental patients requiring prolonged hospitalization with continued treatment, as well as new acute admissions. The original plans of this hospital did not envision the considerable number of long-term patients now within the facility. Certain departures from general medical and surgical hospital routine were necessitated, and change in orientation of personnel was requisite. The introduction of 240 long-term mental patients over a period of 16 months created some apprehension on the part of everyone in the hospital. From the onset, security measures were kept at a minimum. The wards were open where possible, with utilization of regular dining room facilities. Recreational areas and activities within the building were used to a great extent by the NP patients. Employees throughout the hospital came into frequent contact with almost all of the patients from the NP Service, and this created stressful situations at times.

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The "total push" or comprehensive program in psychiatry does not represent a new concept of treatment. Pauncz states, "The term 'total push,' coined by Myerson in 1931, expressed efforts and tendencies in psychiatry which go back more than a hundred and fifty years." He cites Rush, Pinel, Simon, and Myerson as forerunners of the total push program. Group psychotherapy, as one aspect of the total treatment program, has received increasing attention. Goldfarb and Park utilized group therapy in a total program with patients receiving EST for psychotic episodes. Just as the comprehensive program in psychiatry is not new, we may quote Hinckley, who notes that group therapy is not new. "Group therapy was first used with chronic and severally ill patients, and yet in its more developed form, has only recently again been brought to bear upon problems of chronic psychiatric patients." Recent reports of group psychotherapeutic programs with long-term patients include those of Galioni, Geller, and Willner. Powdermaker and Frank presented a most detailed report of a group psychotherapy research project with chronically ill schizophrenics. Successful therapeutic rehabilitative programs and intensive socializing programs have been undertaken with groups of patients holding various diagnoses and including long-term psychotic patients.

Subjects and Methods

Experimental Subjects. These patients were selected from among the most poorly adjusted patients within the Neuropsychiatric Service. They were chosen from a larger pool of patients whose names had been suggested by their ward psychiatrists. Criteria for inclusion in the pool were the following: a) schizophrenic diagnosis, b) long period of preceding hospitalization, c) no recent somatic treatment,

and d) obvious psychotic manifestations requiring closed ward care with close supervision.

Since it was planned to utilize EST within this program, permission for shock treatment was requested from the relatives of all patients within the pool. The experimental group comprised those 10 for whom shock permission arrived earliest.

Control Subjects. A group of control patients was selected from the pool. Its members were matched person for person with the experimental group as closely as circumstances permitted: for number of years since first admission (chronicity), age, and especially for ward adjustment and severity of illness as measured by a Behavioral Rating Scale. The control patients proceeded as usual with the daily program of their several wards. Their identities were known only to the personnel who were required to accomplish such tasks as psychological testing, re-testing, and comparative ratings for control purposes.

Comparative statistics for the experimental and control patients are presented in tables 1A, 1B, and 1C. The groups were similar (null hypothesis not rejected) for chronicity, age, and ward adjustment. The demonstration patients were slightly younger than their controls, but this was not statistically significant at the .05 level of probability.

Initial status on the Multidimensional Scale for Rating Psychiatric Patients, which measures extent of psychopathology, was similar for both groups (null hypothesis not rejected by *t*-test or *F*-test). This scale is described below under Methods. A higher score signifies greater pathology. Initial status of demonstration and control patients was also comparable for the tests of psychomotor efficiency (see below and table 4A).

All patients, demonstration and control, carried schizophrenic diagnoses. Analysis of type showed, a) demonstration group: three paranoids, four hebephrenics, three catatonics; b) control group: four paranoids, 5 hebephrenics, one catatonic. It is emphasized that these patients were matched on the basis of their ward behavior and social communication as measured by the Behavioral Rating Scale, not on the basis of formal schizophrenic reaction-type.

Socio-economic and educational status of demonstration and control groups were similar. Occupations represented in the demonstration group were: salesman, mechanic, tailor, painter, laborer, spring maker, clothing cutter, odd

TABLE 1A.—Pre-Experiment Data, Years Since First Admission (Chronicity)

	Mean	*t*	*P*	*Variance*	*F*
Demonstration group	26.7	.09	>.90	83.62	1.10*
Control group	26.9			75.91	

* Not significant at 5 per cent level of confidence.

TABLE 1B.—Pre-Experiment Data, Age

	Mean	*t*	*P*	*Variance*	*F*
Demonstration group	56.2	1.84	.10—.05	7.04	1.17*
Control group	58.6			6.01	

* Not significant at 5 per cent level of confidence.

TABLE 1C.—Pre-Experiment Data, Behavioral Rating Scale

	Mean	*t*	*P*	*Variance*	*F*
Demonstration group	40.8	0.34	0.80—.70	198.71	1.24*
Control group	40.0			247.08	

* Not significant at 5 per cent level of confidence.

jobs, stock clerk, and brakeman. Occupations in the control group were: automobile upholsterer, garage helper, laborer, clerk, farm laborer, mechanic, weaver, teamster, crane operator, and bar porter. No patients had attended college, only two had attended high school, and the remainder were distributed through the lower grammar school grades.

Methods. Demonstration and control patients were rated with the Behavioral Rating Scale for the social and self-care adequacy of their behavior prior to the start of this demonstration program. The Behavioral Rating Scale had been developed and validated for the present purpose. It is a simple, readable, forced choice type of scale with 100 items answered yes or no, which reflect many aspects of the patient's social communication and ward adjustment. Scoring reliability for the scale ($N=40$) is .79. Prior evaluation utilizing the *t*-test as well as the Chi-Square test of independence showed high validity in the scale's ability to differentiate well adjusted from poorly adjusted chronic patients (level of confidence $<.001$).

The Multidimensional Scale for Rating Psychiatric Patients (MSRPP) by Lorr, Jenkins, and Holsopple was applied to the demonstration and control patients at the end of the third week. This scale introduces a greater measure of comparability and objectivity in the description of mental patients than has been customarily available. It supplements the Behavioral Rating Scale in providing a standard description of patients' behavior and symptoms, is comparable from hospital to hospital, yields a global measure of severity of symptoms, and may be analyzed into patterns of psychiatric disorder.

A brief series of tests of psychomotor functioning and efficiency was administered to all experimental and control patients. They were given to each patient prior to the beginning of the experiment, both morning and afternoon of the same day. The following items were included: digits forward and backward, counting backward from 20 to 1, strength of hand grip with dynamometer (two trials), fluency (number of words in 20 seconds) and time judgment (ability to judge a 20-second interval of time, two trials).

A Weekly Rating Scale (WRS) (table 2) was developed to record short-term fluctuations in patients' behavior. This scale was completed weekly for each patient in the experimental group by every staff member who had continuing contact with that patient. Approximately 10 such ratings were made each week for every experimental patient. The WRS was constituted in two parts. One pertained to the question of *change* independent of direction toward good or poor mental health; the other pertained to the question of *improvement* in behavioral adjustment. Control patients were rated less frequently: once a month, and only by the nurse in continuous charge of their respective wards. Motion picture films with sound tape recordings of demonstration and control groups were taken under identical circumstances at the beginning of the experiment and thereafter at monthly intervals.

TABLE 2.—Schedule of Ratings, Tests, and Films

	Demonstration Group	*Control Group*
Weekly rating scale (WRS)	Weekly, 2nd through 26th experimental weeks	5th, 9th, 13th, 17th, 21st, 26th experimental weeks
Behavioral rating scale (BRS)	Pre-experimental, 5th, 9th, 13th, 17th, 22nd, 25th experimental weeks	Pre-experiment, 5th, 9th, 13th, 17th, 22nd, 25th experimental weeks
Multidimensional scale (MSRPP)	3rd, 15th, 25th experimental weeks	3rd, 15th, 25th experimental weeks
Psychomotor tests of efficiency	Pre-experiment, 9th, 26th experimental weeks	Pre-experiment, 9th, 26th experimental weeks
Films, recordings	Pre-experiment, 5th, 9th, 13th, 18th, 26th experimental weeks	Pre-experiment, 5th, 9th, 13th, 18th, 26th experimental weeks

Therapeutic Procedures for Demonstration Patients

Corrective Therapy. This was directed toward group activity and social contact. Graduated motor activity was encouraged. Equipment employed: basketballs, parallel bar, weight lifting gear, rowing machines, and stationary bicycles.

Hydrotherapy. Daily morning needle showers and scotch douches were applied. These gave cutaneous physiological stimulation and provided some variation in environment.

Music Therapy. Two group meetings were held weekly, with special emphasis upon participation in a rhythm band and later with modified eurhythmics. The atmosphere was one of permissiveness music therapy was directed toward socialization and interpersonal communication, as well as physical activity.

Occupational Therapy. Two meetings were held weekly at first, then at increasingly frequent periods. Clay modeling constituted the initial activity. Patients progressed to drawing, weaving, and carpentry. Purpose: to stimulate interest and channelize energies as necessary; to increase socialization, and to give a feeling of usefulness and accomplishment.

Pharmacological Therapy. One dram three times daily, each patient, elixir of Metrazol (.2 gm./dram) and nicotinic acid (.1 gm./dram), for an 8-week period. This constituted a nutritional supplement.

Recreational Therapy. This included daily games and outings, in addition to passive entertainment. It was designed to stimulate patients and to provide changes in environmental milieu.

Group Psychotherapy. Patients met twice daily for 15-minute sessions of group psychotherapy. A special psychotherapy room was set aside on the ward, to be used for this purpose. The room had been decorated, was furnished with a variety of upholstered chairs, and provided a pleasant, noninstitutional atmosphere. For the first month, refreshments were served following the afternoon session. Observers from among the ward personnel were encouraged to attend the group psychotherapy meetings. Psychotherapy was oriented toward two goals: 1) increase in social and interpersonal communication among the patients, and 2) affirmation of the reality situation, even if this meant denial of delusional content or rejection of the patient's behavior The group therapist took an active role during the meetings.

Electroshock Therapy. EST was not administered immediately upon commencing this project. It was held in abeyance in order that the efficiency of these several treatment modalities, especially group psychotherapy and the therapeutic ward climate, be qualitatively evaluated. Furthermore, it was considered that preparatory treatment as described above would be vital in attaining and maintaining those gains which accrued from EST. The latter was, therefore, not administered until the end of the fifth week. Shock treatments were administered with an Offner apparatus using the instantaneous technique, modified with the use of anectine which allowed us to treat these older men with EST. Patients received an injection of 0.6 mg. of atropine at 8:00 a.m. and then proceeded to the waiting room whence they were summoned individually for treatment. A clinical psychologist remained with the patients in the waiting room to reassure them and emotionally to support them. EST was administered every morning, five days in sequence.

A clinical psychologist was assigned to the demonstration ward to serve as direct consultant to the project personnel. His primary mission was the creation of a therapeutic atmosphere within the ward. The psychologist held two concurrent series of weekly meetings with the ward personnel and with members of the ancillary services. One series constituted an inclusive meeting attended by all staff members who had continuing contact with the patients: nurses, aides, rehabilitation therapists, ward psychiatrist, and social service. The second series was held only with the nurses and aides, who had most frequent contact with the patients. This was necessary since interpersonal and administrative problems arose which required more immediate action or consultation from the clinical psychologist and ward psychiatrist: e.g., assaultive behavior, destruction of property, attendance at therapies. By the end of the eighth week, the need for the second series had been dissipated. It was therefore discontinued.

The clinical psychologist was group leader for the inclusive weekly conference. He led the group in discussing the patients, the progress they had made, and the reasons for changes in patient behavior. Staff-patient relationships and staff interrelationships were considered. Examples and incidents concerning patient behavior were brought to the group by its members. The consultant psychologist attempted to maintain a minimally directive attitude, but did take an active role when this was deemed necessary. Full records were kept of the members' comments and verbalizations, to ascertain extent of change in therapeutic attitude and reactions toward the demonstration group. The demonstration project was evaluated as a growth experience for the staff participants.

Control patients received the customary therapies as prescribed by their ward psychiatrist in accordance with his treatment plan. At various times and for diverse intervals, control patients were assigned to corrective therapy, manual arts therapy, music therapy, occupational therapy, or recreational therapy. All control patients received at least one of these therapies during the period under consideration. Nine of the ten received two or more types of treatment.

Results

Various records and protocols were submitted to quantified treatment: 1) Behavioral Rating Scale, 2) Multidimensional Scale, 3) Weekly Rating Scale, and 4) Psychomotor Efficiency Tests. Qualitative observations were derived from the nurses' and attendants' daily records, stenographic accounts of the inclusive weekly staff meeting, an anecdotal log maintained by the consultant clinical psychologist, from accounts of group psychotherapy and from reports by rehabilitation personnel.

Since the patients in the two groups were individually matched, statistical tests of significance of mean differences employed the formulae for related measures (Lindquist). The F-tests were made according to McNemar.

Table 3A compares demonstration group scores with control group scores attained on the BRS. The significance of the differences in means before and at intervals during the experiment is evaluated, and significance levels are reported. By the end of the ninth week the demonstration group was significantly superior to the control ($P < .02$). During the third month its superiority decreased somewhat; at this time the probability level dropped to .10.

Table 3A and 3B sets forth comparative BRS data for the control group against itself progressively from the beginning of the experiment; it includes similar data for the demonstration group. The mean BRS score of the control group has not changed significantly with the passage of time. It is now lower (from 40.0 to 33.9) but the decrement is not statistically significant.

The mean BRS score for the demonstration group rose steeply following the application of EST. It attained its maximum at the end of the ninth experimental week (table 3A, column 4: 9th week). Since then there has been some minor decrement in the group's mean BRS.

TABLE 3A.—Intergroup Comparisons of Demonstration (D) and Control (C) Scores on Behavioral Rating Scale

Statistic	*Pre-Experiment*	*Experimental Week*		
		5th week	*9th week*	*13th week*
D mean score	40.8	45.3	57.8	53.1
C mean score	40.0	37.7	32.8	33.9
t	0.34	1.46	2.99	2.15
P	.8—.7	.2—.1	.02—.01	.10—.05
D variance	198.71	168.74	502.17	613.51
C variance	247.08	305.49	295.27	342.26
F	1.24*	1.81*	1.70*	1.79*

* Not significant at 5 per cent level of confidence.

TABLE 3B.—INTRAGROUP COMPARISONS OF DEMONSTRATION (D) AND CONTROL (C) SCORES ON BEHAVIORAL RATING SCALE

*Comparison**	*t*	*P*	*F*
Cp vs. C5	0.81	.50—.40	1.23†
Cp vs. C9	1.63	.20—.10	1.19†
Cp vs. C13	1.41	.20—.10	1.38†
C5 vs. C9	2.14	.10—.05	1.03†
Dp vs. D5	0.90	.40—.30	1.17†
Dp vs. D9	2.37	.05—.02	2.52†
Dp vs. D13	1.63	.20—.10	3.08†
D5 vs. D9	2.53	.05—.02	2.97†

* Control and demonstration group mean scores, respectively, pre-experiment (Cp, Dp) and during the 5th, 9th, and 13th experimental weeks (C5, C9, C13; D5, D9, D13).

† Not significant at 5 per cent level of confidence.

Table 4 compares demonstration with control findings on the Multidimensional Scale. Each patient had been rated by an observer during the third week of the program's course, and again by the same observer 12 weeks later (15th experimental week). The data in table 4A are concerned with degree of pathology as measured by the scale (Lorr). A higher score reflects greater pathology. By the 15th week, the demonstration group had improved significantly over the control group ($P < .05$). Table 4B presents the results of significance tests which contrast the control group with itself successively during the experimental period to date. It presents similar tests for the demonstration group over the same time interval. Although the mean scores tend to show increasing pathology for the control group as time progresses (see table 4A), and decreasing pathology for the demonstration group (table 4A), these intragroup trends do not attain statistical significance (see table 4B). However, when groups are compared with *each other* at the end of the 15th week (as in table 4A), then definite improvement is shown for the demonstration group over the control group during the elapsed time interval. Note that table 4A, column 2 (third experimental week) shows a healthier mean MSRPP score for the demonstration group, although it does not attain statistical significance. The experiment had been in progress for 3 weeks prior to these Multidimensional Scale ratings, and during this period the demonstration group had already shown improvement according to the Weekly Rating Scale. This accounts for the somewhat higher initial Multidimensional pathology score received by the control group. The initial variability of the control group exceeds that of the demonstration group. This is consistent with the difference in means, and is due to the divergent effect of the program upon the two groups: demonstration versus control. By the 15th experimental week, when the MRS means had become more pronouncedly divergent, the variances became less so. More

TABLE 4A.—INTERGROUP COMPARISONS OF DEMONSTRATION (D) AND CONTROL (C) SCORES ON MULTIDIMENSIONAL RATING SCALE

Statistic	*Initial Rating, 3rd Experimental Week*	*15th Experimental Week*
D mean score	47.91	43.07
C mean score	60.53	65.77
t	1.02	2.77
P	.40—.30	.05—.02
D variance	257.79	234.02
C variance	836.99	648.98
F	3.24	2.77*

* Not significant at 5 per cent level of confidence.

TABLE 4B.—Intragroup Comparisons of Demonstration (D) and Control (C) Scores on Multidimensional Rating Scale

Comparison	*t*	*P*	*F*
D (week 3 vs. week 15) ...	1.05	.40—.30	1.10*
C (week 3 vs. week 15) ...	1.08	.40—.30	1.28*

* Not significant at 5 per cent level of confidence.

and more of the control patients showed greater pathology, whereas the demonstration patients showed decreasing pathology.

Figure 1 (Weekly Rating Scale) is a graphic representation of the contrasting results for demonstration and control groups as measured by the WRS. It parallels the results obtained with BRS and MSRPP, and epitomizes the findings of this study. It will be recalled that each demonstration patient was rated weekly on this brief scale by all staff members (nurses, aides, therapists, etc.) who served that patient. Initial ratings for the demonstration patients were made during the second week, and continued weekly thereafter (fig. 1, broken line). These same scales were completed monthly for each control patient by his ward nurse who was familiar with him. The number of raters was reduced for the control patients in order that the patients' identities remain unknown to the staff. This avoided biased treatment. The continuous line in figure 1 represents developments for the control group. The ordinate is a sliding scale, starting with the "unchanged" or zero (0) score during the first rating week for both groups. Thus, week 3 for the demonstration group was compared against week 2 rather than week 1. The week immediately preceding was always taken as the baseline or zero point, and increments or decrements were considered from this baseline. The weekly graphing for the demonstration group was derived from the median gain or loss of all 10 patients. The circles represent median scores; extensions above and below represent the 75th and 25th percentiles. The graphic portrayal of changes upward toward improvement within the demonstration group is dramatic, particularly when contrasted with the control's steady horizontal course. Electroshock treatment, administered to the demonstration group during the sixth experimental week (figure 1, EST 2/22—2/26/54, had a

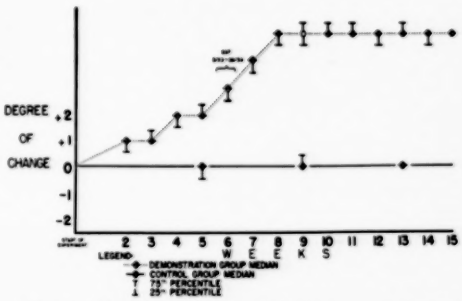

Fig. 1. Degree of change of demonstration and control groups as measured by weekly rating scale.

pronounced ameliorative effect upon patient symptomatology. The slope of change thereafter in figure 1 veered sharply upward, reflecting accelerated change in the direction of improvement.

The results of the psychomotor tests of efficiency are presented in table 4 (pre-experimental status) and table 4 (ninth experimental week). Mean scores are reported in the tables, and also the number of patients with noncooperative or unscorable responses. The number of patients producing scorable responses is 10 minus the number of patients producing unscorable responses. Thus, table 5A, the row for digits forward (A.M.), five demonstration patients gave scorable responses with mean score 5.8, and five control patients gave scorable responses with mean score 5.4. These table 5A data indicate comparable initial status for demonstration and control patients. Table 5B shows no evidence of special change during the experimental period through the ninth week. In this connection, the paucity of cooperative responses renders the data unsuitable for complex statistical analysis. Qualitative comparative analysis of groups, pre- and post-, with regard to the number of cooperative patients within each subtest and for the totals,

TABLE 5A.—TESTS OF PSYCHOMOTOR EFFICENCY: PRE-EXPERIMENT DATA

Test	*Time*	*Number of Patients with Unscorable Responses*		*Mean Data on Patients with Scorable Responses*	
		Demonstration	*Control*	*Demonstration*	*Control*
Digits forward	A.M.	5	5	5.8	5.4
	P.M.	6	6	6.2	4.7
Digits backward	A.M.	5	5	2.8	3.4
	P.M.	6	6	3.7	2.2
Counting backward		5	6	—	—
Time	A.M.	—	—	15″.4	15″.7
No. of errors		—	—	0.60	0.00
		6	7	—	—
Time	P.M.	—	—	12″.5	18″.8
No. of errors		—	—	0.25	0.00
Fluency	A.M.	4	6	3.0	3.7
	P.M.	5	7	4.0	4.3
Dynamometer	A.M.	3	6	23.5 kg.	32.2 kg.
	P.M.	4	6	26.3 kg.	34.1 kg.
Estimating 20″	A.M.	7	7	—	—
mean deviation from 20″		—	—	11″.1	4″.3
	P.M.	6	7	—	—
		—	—	12″.8	6″.1

is revealing. Both demonstration and control patients give generally fewer unscorable responses to the tests of table 5B (ninth experimental week).

The change in ward regulations and ward climate for the demonstration patients has been a remarkable step for them. Their present ward is unlocked. Its occupants (other than the demonstration patients) are privileged, non-psychotic, and awaiting discharge. A number of problems arose at the beginning. One of the most serious was the assaultive behavior of a demonstration patient. Once he struck a nurse, a second time he hit an aide. It was necessary to illustrate to the group that such behavior was unacceptable even from a psychotic patient. The need for isolation was apparent, but it was necessary to implement the decision by discussion with ward personnel. It was concluded that any assaultive patient be removed to a seclusion room for 10 minutes immediately following his act, and that the reason for this action be made clear to him. Patients not in contact seemed to realize what was happening and some who were excited or agitated (e.g., patient D10—see later) were calmed by seclusion.

Another problem was that of elopement. Patient D9, concerned with leaving the hospital to go to New York, did make an abortive attempt to elope at one point when he was given his own clothes. Again it was essential to discuss with ward personnel the administrative steps required in dealing with this and similar problems. Close liason was necessarily maintained with ward personnel. The role of consultation was vital in maintaining high standards of patient care. Many supplementary and informal conferences occurred. These series of meetings served a variety of purposes. They enabled each person working with the patients to disseminate his knowledge concerning them. They provided a fine opportunity for discussion and constituted an excellent teaching device. Psychodrama and role-playing techniques were applied as necessary, and general principles of psychological treatment were successfully imparted. Problems continually

TABLE 5B.—Tests of Psychomotor Efficiency: Ninth Experimental Week

Test	*Time*	*Number of Patients with Unscorable Responses*		*Mean Data on Patients with Scorable Responses*	
		Demonstration	*Control*	*Demonstration*	*Control*
Digits forward	A.M.	4	2	5.50	6.00
	P.M.	4	4	6.00	5.16
Digits backward	A.M.	4	2	3.83	3.00
	P.M.	4	4	3.33	2.33
Counting backward	A.M.	4	4	—	—
Time		—	—	16″.83	20″.50
No. of errors		—	—	0.33	0.16
Time	P.M.	5	6	—	—
No. of errors		—	—	11″.80	22″.00
		—	—	0.20	0.25
Fluency	A.M.	3	4	5.28	3.66
	P.M.	5	5	4.20	3.40
Dynamometer	A.M.	1	3	26.72 kg.	27.28 kg.
	P.M.	1	5	27.50 kg.	28.30 kg.
Estimating 20″ mean deviation from 20″	A.M.	4	4	—	—
		—	—	28″.66	13″.41
	P.M.	4	6	—	—
		—	—	9″.91	3″.75

arose because the patients chosen for this project were among the most severally ill in the entire psychiatric service. This point, along with some qualitative features, can best be illustrated by brief sketches of these patients' behavior. In this qualitative description of the patients it must be stressed that seemingly minor bits of behavior actually had a marked significance. Thus, when demonstration patient D7 sat down for the first time and looked about alertly after many months of catatonic stupor and muteness, it was apparent that a most important and positive change had occurred. For this patient the episode constituted a profound alteration in his behavioral pattern. Acceptance of privileges by patients D5 and D9 definitely reflected improvement in their social adjustment. It was a dramatic moment when patient D3 shook hands with a staff member for the first time. Jubilant were the ward personnel on the day that patient D10 put an end to his compulsive undressing and dressing. Thus, ostensibly slight changes in the behavior of these long-term patients were truly great changes when viewed sequentially from the reference point of their previous behavior.

Demonstration Group (D)

Patient D1, hebephrenic schizophrenic, age 58, first admission 1920, continuously hospitalized. Extreme hoarder, stuffed cigarette butts, dirty linen, etc. into his clothing. Appeared hump-backed because of a large wad of newspapers he carried about. When addressed, gave vigorous nod of the head, and said "yeah," but did not otherwise speak. Paced about a good deal. Always wore a dirty cap.

Patient improved following EST. For a while, he did not insist on wearing his cap, and his hoarding behavior abated. He seemed eager to gain attention and recognition and would hold out his hand to personnel to shake. Fifteen weeks postexperiment, patient maintains some improvement but continues to hoard worthless items. When confronted with his behavior, he feints at his accuser although he is not assaultive. He has been recommended for further EST.

Patient D2, hebephrenic schizophrenic, age 55, first admission 1920, continuously hospitalized. Was silly and acted the part of the "clown." Constantly gestured to gain attention. Exhibited his knees, breasts, and teeth in grotesque fashion. Legs were

ulcerated due to constant picking and irritation. Spoke in a loud, garbled, incomprehensible fashion. Smoked cigarettes with burning end in his mouth, then used the wet end to write on the wall.

At the very start of the experiment, an increase in the patient's abnormal behavior was noted. He broke a window, loosened light fixtures, and distributed wrapped feces about the ward. The patient received only two EST because of medical contraindications, at which time he was transferred to an infirmary ward. Here he became extremely passive and infantile. Following transfer back to the demonstration ward his behavior again became oriented toward obtaining attention. Fifteen weeks postexperiment this patient no longer destroys ward property. Occasionally now he is pleasant in conversation. His bizarre mannerisms are less evident.

Patient D3, catatonic schizophrenic, age 58, first admission 1930, continuously hospitalized. Patient constantly maintained a standing, catatonic pose in the corridor. Usually he stood with an arm and leg raised, mumbling to himself. When addressed, he responded only with references to "ancient free accepted Masons." His mannerisms and gestures were numerous and bizarre.

The patient improved quite dramatically following EST. He continued to perseverate on topics concerning Masonry, but did engage in other discussions and did make pertinent responses. He rarely stood in a catatonic pose. He was cooperative during all therapeutic procedures and could relate himself socially to certain personnel. Eating habits remained poor but the patient occasionally laughed and did participate well in group therapy. Fifteen weeks post-experiment, patient shows some retrogression following the improvement exhibited after EST. He is less social, resorts more frequently to talk about the Masons. He still participates actively in corrective therapy.

Patient D4, paranoid schizophrenic, age 60, first admission in 1944, continuously hospitalized. Called himself "Jesus Christ," "the devil," "Jupiter," and a "Chinese mystic." He often "telephoned" the planet Mars. Remained in an alcove in the day room and allowed only two other patients near him. He wore strings and rubber bands on his fingers and forehead to "keep off the pressure." Patient often shouted, swore, and called "my own FBI" by cupping his hand over his ear.

Following EST, patient improved markedly, received a privilege card, and requested to be discharged that he might go to work. He thought that perhaps he had just been admitted to the hospital, and he presented the picture of a minor anxiety reaction with some slight depression. He had no memory of his former delusions and hallucinations. After a few weeks, he began to regress. A few of his strings reappeared, he again seemed to be hallucinating, although much less than before. Fifteen weeks post-experiment, patient still wears a few strings, but is much more social. He is now generally cooperative in marked contrast to his earlier state. Hallucinations and references to Mars or the devil are rare. He is on partial privileges.

Patient D5, hebephrenic schizophrenic, age 52, first admission in 1915, four subsequent admissions, continuously hospitalized since 1939, with one trial visit in 1939. Alternated between periods of good contact in which he was cooperative, depressive phases when he was mute, sloppy, and threatened assault, and excited periods when he shouted and laughed inappropriately.

Patient gradually improved, especially following EST. He has had a privilege card, and has been regarded as a "leader" in the group. He helped other patients of the demonstration program, and was best accepted by the younger, nonpsychotic patients on the ward. He performed well on his responsible work detail (printing pharmacy labels). The patient wished to go home for a holy day visit, but was rejected by his family through written communication. This precipitated one of the depressive episodes which had characterized his pre-experiment behavior. Fifteen weeks postexperiment, it has therefore been necessary to cancel his privilege card and work detail. He himself has asked for transfer to the acute treatment ward. He is recommended for further EST.

Patient D6, catatonic schizophrenic, age 57, first admission 1923, continuously hospitalized. Was mute, frequently incontinent, often did not walk: had to be helped in a wheelchair. He required feeding since he ate only bread and coffee if left to himself.

Patient improved slightly following EST. He whispered a few words in Italian and in English, the first his family had heard in 15 years. This improvement was not long maintained. The patient's wheelchair finally was removed, but feeding remained a problem. He was now only occasionally incontinent, but had frequent diarrhea. Fifteen weeks post-experiment, patient is generally unchanged when compared with his pre-experiment behavior although he does show increased reactiveness to the environment in the form of greater resistance.

Patient D7, hebephrenic schizophrenic, age 57, first admission 1924, continuously hospitalized. Stood in a catatonic posture, head bowed and hands at his sides. He never spoke, and ate with his hands. His nose continuously was running.

Patient showed gradual improvement, and following EST, spoke in both English and Yiddish. He used eating utensils, and participated in gymnastic recreation. Recently he retrogressed, and now no longer speaks. He was transferred to an infirmary ward for treatment of swollen ankles. Fifteen weeks postexperiment, he continues to participate well in corrective therapy. At times he appears alert.

Patient D8, catatonic schizophrenic, age 52, first admission 1923, continuously hospitalized. Seemed confused and surprised by environment, moved slowly, would not eat unless continually reminded that there was food in front of him. Mute, but occasionally mumbled under his breath.

Patient was unchanged following EST, and remains so 15 weeks postexperiment. He had recently begun to receive drum lessons and is reported to have a good sense of rhythm. He does not communicate verbally, but frequently now he peers out of the windows as though he is seeing the hospital grounds for the first time. Occasionally he mumbles "what the hell!" or similar expletives. Although his eating habits continue to be poor, he shows more socially oriented behavior than before.

Patient D9, paranoid schizophrenic, age 58, first admission 1924, four subsequent admissions, continuously hospitalized since 1948. He was extremely paranoid, and would walk away from personnel who approached him but followed personnel when they left. Constantly asked to be discharged to New York City. Used to shout and to kick at the door when angry. Said there was a machine outside which influenced his thoughts. Said that all records which are dictated by doctors are about him. Never sat down, always pacing.

Patient improved while receiving EST, related himself very well to personnel, and was pleasant and cooperative for a brief time. He regressed somewhat temporarily and began demanding to go to New York City. Since then he has again improved. Fifteen weeks postexperiment, patient shows dramatic improvement over preexperimental behavior. He has a privilege card, goes out on pass unaccompanied, and is an assistant in the Recreation Sports Section where he does an excellent job. He has made friends in the hospital. He has some physical complaints, but considers himself ready for discharge. He has disassociated himself from the demonstration group and prefers to seek friends among personnel and among those patients who are not psychotic.

Patient D10, paranoid schizophrenic, age 55, first admission in 1940, continuously hospitalized. Constantly undressed himself, turned his clothes inside out, dressed himself again, and then repeated the ritual. Jumped on tables, threatened assault, often paced up and down, turned furniture around (including couches) to "straighten out the world." Hallucinated actively.

Patient gradually decreased this behavior and completely stopped it following EST. He was cooperative in all ward procedures. Gradually he began to regress, at first whispering to imagined figures and then talking to them while disregarding reality figures in his environment. Fifteen weeks postexperiment, he now undresses only rarely, does not jump on tables nor turn furniture around. He still hallucinates although not as often as before.

Control Group (C)

Patient C1, catatonic schizophrenic, age 59, first admission 1918, continuously hospitalized. Uncooperative, paced up and down with hands in pockets, constantly swore. He avoided personnel and was resistive to all procedures. He often threatened assault. He hallucinated frequently and had outbursts of temper.

Patient has remained essentially the same during the 15 weeks since start of experiment. For a while he made occasional verbal requests to ward personnel for transfer to a quieter ward. He now continues to hallucinate and paces up and down in a disorganized fashion.

Patient C2, paranoid schizophrenic, age 63, first admission 1933, subsequent admission in 1935, continuously hospitalized since. He was suspicious and said that doctors and nurses were murderers and poisoners. Patient stayed by himself, pacing and looking out of the window. He would run away when approached. Fifteen weeks postexperiment, he is slightly friendlier: he still avoids interpersonal relationships but will smile at jokes, albeit suspiciously. During this 15-week period, has been characterized by hostility and seclusiveness.

Patient C3, hebephrenic schizophrenic, age 62, first admission 1920, subsequently admitted in 1925, continuously hospitalized since. Patient generally stood in a corner and was seclusive.

Patient remains essentially unchanged, 15 weeks postexperiment. He was a feeding problem for a short period of time.

Patient C4, paranoid schizophrenic, age 57, first admission 1940, continuously hospitalized since then. He swore and was uncooperative, often refusing to go to appointments. He had grandiose ideas, and was suspicious of everyone. His attitude varied frequently from friendliness to verbal abusiveness. Patient continues verbally abusive and hostile 15 weeks postexperiment, although perhaps slightly more cooperative. He has grandiose notions with quick changes in attitude as before.

Patient C5, hebephrenic schizophrenic, age 57, first admission 1922, since then continuously hospitalized. He rarely spoke. Patient sat all day, eyes closed, shaking his head from side to side.

Fifteen weeks postexperiment, patient is unchanged. He frequently hits himself on the chest in addition to shaking his head. At times he is resistive and hostile.

Patient C6, paranoid schizophrenic, age 60, first admission 1923, continuously hospitalized. He was withdrawn and fearful. His appearance was sloppy, unkempt, and he spoke very little. He sat generally with his head drooping down on his chest.

No improvement is shown 15 weeks postexperiment. Feeding is now a problem, for the patient is diabetic and eats food of other patients in defiance of his diet.

Patient C7, hebephrenic schizophrenic, age 57, first admission 1918, continuously hospitalized since then. Patient walked about mumbling and picking up any scraps or pieces of dust on the floor. He spoke in a sing-song tone.

Slight improvement has been noted since then. Patient accepts cigarettes from the aide where previously he smoked only butts from the floor. He is able to converse with patients at times, although his conversation is still slightly limited. Change in his behavior started after his return from the infirmary ward. Fifteen weeks postexperiment the patient

shows great fluctuation in behavior. One day he is good-natured and can be joshed, the next day he is assaultive.

Patient C8, hebephrenic schizophrenic, age 55, first admission 1925, continuously hospitalized. He was suspicious and spoke only when addressed. He sat with eyes closed or staring straight ahead. He was isolated and withdrawn. Occasionally he had verbal outbursts.

Fifteen weeks postexperiment, this patient is unchanged. He refuses to attend his prescribed therapies, and remains seclusive and withdrawn.

Patient C9, hebephrenic schizophrenic, age 58, first admission 1921, continuously hospitalized, and rarely spoke. He was passive and withdrawn. He ate excessively.

During this 15 weeks, the patient has shown some slight improvement. He participates in ward games if encouraged and seems slightly more gregarious. His smiling and his overeating remain as before.

Patient C10, paranoid schizophrenic, age 58, first admission 1941, continuously hospitalized. He had a privilege card and was on an open ward. He was frequently irritable, with occasional outbursts of anger. Usually he stayed by himself, completing jigsaw puzzles. He spoke politely to personnel.

Fifteen weeks postexperiment, the patient remains unchanged. He is resistive to the slight changes in ward routine. He engages in little communication with other patients.

Discussion

This demonstration has elicited considerable interest among the nursing personnel, the staff of the psychiatric service, and the ancillary treatment staff, as well as administrative divisions such as Dietetics. It is a difficult and complex type of project, which can be accomplished only through the full cooperation and participation of the nursing service and rehabilitation staff. The program constitutes a learning and growth experience for all members involved. Personnel caring for the patients have learned a great deal from the project, and experience a state of high morale. This is evident in their comments and behavior concerning the project. One ward nurse attends the special staff meetings even while on leave. She has taken home slipper socks belonging to a demonstration patient in order to mend them. Ward aides constantly express their surprise at the behavioral improvement shown by the demonstration patients. This is especially true of those aides who knew patients when they were on the "locked" chronic ward. As a result of the demonstration project, ward personnel have contributed the names of patients still on locked wards whom they feel might benefit from another such program.

The experimental patients were placed together on one ward in order that they might live together, eat together, and socially engage in all activities. Interaction derived from group psychotherapy and other rehabilitative treatment hence was carried over into their ward activities. In previous psychotherapy conducted with a group of long-term schizophrenics, an intelligent paranoid patient had asked: "Why is that group rapport ceases when the group meetings end?" In this former group, patients had come together twice a week from their several wards, and little social carry-over from the therapeutic meetings was observed. Reasoning from this cue, it was considered that social interaction would be enhanced through placement of all the demonstration patients within the same ward. Increased social interaction has definitely been noted. On one occasion, the usual ward activity was cancelled and by mistake three of the most disturbed patients in the group became separated from the remainder of the group. They were later found waiting outside the door of the room in which the scheduled activity ordinarily took place, having gone there by themselves. One of the patients was leading the other two. Social interaction has also been noted in that certain patients distribute their candy and cigarettes to other members of the group. Some of the patients push the wheelchairs of others.

The move to the open ward represented a most significant environmental change. The unlocked doors constituted a remarkable event for the group. Furthermore, they were now living with younger, neurotic, and recovered patients who were nearing discharge from the hospital. The demonstration patients were no longer surrounded by determined, psychotic patients who constituted the sole source of interpersonal stimulation. The effect on the younger neurotic patients was immediate and profound. From the moment the combined ward was formed, discontent was voiced by the younger men. Two patients sought discharge against medical advice, ostensibly because the long-term patients had invaded their life. It was necessary to hold several meetings with the younger men to discuss their feelings

in this regard. Their predominant complaints were those of fear. The scope of the problem was fully described to them, and it was explained how the long-term patients might benefit from such placement on an open ward. The meetings ended on a note of altruism. Some of the younger patients asked how they might help their fellow-patients. They were informed that they would be of greatest assistance by setting a good example for the long-term patients.

Initially, little or no positive interaction occurred between the two groups. The neurotic patients voiced complaints about the noise (usually in response to hallucinations) made by some of the demonstration group. After the phase of high resistance, positive interaction took place. This has gradually increased in extent. The younger men now adopt a protective attitude. They feel proud to have been associated with this project, for they have witnessed what they regard as near-miraculous changes in the behavior of the demonstration patients. Some of the demonstration patients have been accepted as equals by the younger men. For example, one of the former is "Scrabble" champion of the ward. Another has been accepted as a peer in the neuropsychiatric patient newspaper office. References to some of the demonstration patients are now on a first name basis. Two members of the demonstration group currently share semi-private rooms with two of the younger patients. They eat together in the privileged dining room and seem to have been completely assimilated by the younger men. Those demonstration patients who were extremely withdrawn and who made no friendly overtures toward the neurotic patients have been accepted on a "live and let live" basis. In two instances, these patients were adopted as "projects" by the healthier patients who desired to help them and perhaps to understand them. A warm, friendly climate characterizes the ward. Both groups apparently have profited from each other. The choronically ill patients seek to identify themselves with their fellow patients in terms of tidiness, etc. The younger men have gained therapeutically from the altruistic act of helping fellow men. Psychoneurotic and/or recovered younger patients transferred to this open ward prior to discharge accept the demonstration patients as fellow patients. They respond to them as individuals, just as they do to the other patients on the ward.

The goal of this demonstration program is not necessarily to discharge the long-term experimental patients from the hospital. Rather, it is to improve their condition to the point where they will accept privileges and can care for themselves on open wards. Discharge as a primary goal is unrealistic in view of their prior period of lengthy hospitalization. Also, relatives are not willing to accept these men back into their homes. They have long made an adjustment without them, and are loath to reorganize their own social orbit with the inclusion of our patients.

Quantitatively, the results indicate that marked improvement has occurred during these 15 weeks in which the demonstration program has been functioning. Definite evidence of improvement is derived from analysis of the Behavioral Rating Scale, Weekly Rating Scale, and the Multidimensional Scale. Data from the brief psychomotor tests of efficiency show no evidence of special change during the experimental period. The tests apparently do not reflect change in sociobehavioral status of the patients, and perhaps are unrelated to those qualities measured in the several rating scales. It is alternately possible that the tests do not reflect generalized change because they constitute only very brief periods of observation. Furthermore, they require cooperation which lies beyond the volition of the majority of these long-term, overtly psychotic patients. The number of patients who responded appropriately was too small to yield statistical tests of significance.

Qualitatively, changes in these demonstration patients have been obvious to all who observe them. Some patients have changed remarkably, others moderately, a few not at all. The control group continues approximately as before or perhaps slightly worse, although its loss in social communication and adaptiveness of behavior does not attain statistical significance.

These findings are dramatic, but not unexpected in view of general psychiatric experience with mental patients. They point up the favorable results which issue from active staff interest and participation in a full treatment

program. Staff morale, and psychological support from all echelons on the ward have been vital to the continuing progress and favorable accomplishments of this program. It was natural that waves of pessimism transiently flooded the ward and ancillary personnel. However, these shoals were navigated successfully through the use of group discussion and methods which assured strongly positive feeling and interest. How has this program affected personnel in other psychiatric wards within the hospital? It is our impression that it acts as a training program whose effects filter through to aides, nurses, and rehabilitation therapists beyond the immediate ward concerned. Marked interest is shown in the outcome of this project. Nurses and aides often have asked to be transferred to the ward where the study is in progress.

A main contribution has been the utilization of psychological instruments with statistical treatment and verification. Although it is known that psychotic patients can be helped by intensive treatment and by special therapeutic interest of the staff, a scientific approach and program such as this constituted dramatic proof to the hospital community that improvement can be accomplished. One need not surrender pessimistically, nor conclude that with chronic patients effort is useless. This has been emphatically undscored by our selection of patients with very poor prognosis. The program serves as a most effective training device. It is a pilot program: should the present results be maintained, then additional long-term patients will receive similar treatment.

Summary

This was the first report of a comprehensive psychiatric treatment program designed to improve the ward adjustment of long-term schizophrenic patients. It described results obtained during the first 15 weeks of study. A variety of treatment modalities was utilized, including EST and with special emphasis upon group psychotherapy. The program was undertaken to demonstrate the potentialities for improvement of long-term schizophrenic patients.

Experimental (demonstration) and control patients, 10 in each group, were individually matched for age, chronicity, and ward adjustment. Educational level and socioeconomic status were equivalent. Control subjects proceeded with their usual ward treatment programs, but all demonstration subjects were combined into a social unit and transferred into a separate and open ward. Two group psychotherapy sessions were conducted daily. Other treatments included corrective therapy, hydrotherapy, music therapy, occupation therapy, pharmachological therapy, recreation, and EST. The personnel of this demonstration ward, together with the rehabilitation staff, participated in special group meetings and discussions. All patients were studied at the beginning of the experiment and at stated intervals thereafter. Techniques employed were: Behavioral Rating Scale, Multidimensional Scale for Rating Psychiatric Patients, Weekly Rating Scale, and brief psychomotor efficiency tests. The ensuing data were quantified.

At the fifteenth week (cut-off date of this report), the demonstration patients had attained statistically significant improvement over the control patients, as measured by the Behavioral Rating Scale and the Multidimensional Scale. Results of the Weekly Rating Scale were charted. They were manifestly in favor of the demonstration patients. The brief psychomotor tests of efficiency failed to differentiate demonstration from control patients during this experimental interval but cooperative responses on these tests were too few to permit statistical tests of significance.

Qualitative aspects of the experiment and its results were discussed. This demonstration program has constituted a stimulating training device.

Acknowledgements

Sincere thanks are due to the nurses, aides, rehabilitation staff, medical illustration laboratory, dietetics, and communications division of the Albany Veterans Administration Hospital. Without their splendid cooperation this study could not have been accomplished. Special acknowledgement is made to the Hospitalized Veterans Service of Musicians Emergency Fund, Inc., N. Y., who provided music therapy through the services of Mr. Wallace Kotter and with the coordinating activity of our Special Services Department.

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PSYCHOLOGICAL EFFECTS OF MAJOR CEREBRAL EXCISION: INTELLECTUAL AND EMOTIONAL CHANGES FOLLOWING HEMISPHERECTOMY[1]

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PROBLEM

A restricted destructive type of procedure, such as the removal of a limited area of the brain, has often been resorted to in the hope of benefiting patients with brain tumor or seizures. Relatively little is known, however, about the physical and mental changes which may accompany a considerably more radical brain operation involving the removal of an entire cerebral hemisphere. Since more limited cerebral operations have been discovered to yield, in general, only transitory relief of seizures in patients who have infantile hemiplegia, the performance of a hemispherectomy on such patients has recently found increasing favor among neurosurgeons. Infantile hemiplegia is the name assigned to an end-state of a variety of pathological conditions in which the cerebral hemisphere is affected at some time before, during or after birth.

In almost all cases, before a hemispherectomy is decided upon, the patient is first demonstrated to have the following—usually in combination: hemiplegia, poorly controlled convulsions, and mental abnormalities. The removal of an entire cerebral hemisphere is a formidable procedure, especially because of the serious dangers of shock, of hemorrhage, of infection, and of increasing the neurological deficit. It is for this reason that it seems desirable to subject to the most careful scrutiny the psychological consequences of an operation of this type. It is hoped that this report, which concerns itself with intellectual and personality changes in a series of four patients who have undergone hemispherectomies, will be helpful in providing useful information to professional workers who have the responsibility of weighing the advantages and disadvantages of this technique.

A perusal of the literature reveals very few objective psychological studies which attempt the assessment of mental changes accompanying removal of a cerebral hemisphere. In a recent article by Uecker, French, and Johnson (6) the related literature is reviewed in detail. The authors note that with few exceptions comparisons of pre- and postoperative psychological functioning have been done only in very general terms. In their investigation seven patients, ranging in age from 13 to 35 years at the time of operation, and having hemiparesis since infancy or early childhood in addition to poorly controlled epileptic seizures, were subjected to psychological studies. Adjustment, as measured by the Vineland Social Maturity Scale, and intelligence, as measured by the Stanford-Binet, Arthur Point, and Wechsler-Bellevue, were not found to be generally affected by the operation. The slight improvement in intelligence in the two patients who were relatively normal in preoperative intelligence was far too small to be considered significant.

In a study by Krynauw (4), in which 12 hemispherectomies were performed on patients suffering from infantile hemiplegia, marked improvement in behavior, mentality, intellectual functioning, and spatial orientation is reported. However, except for two patients on whom a preoperative Mental Age or Intelligence Quotient is available, there is no mention made of psychological tests. The author's impression of postoperative improvement in psychological status was based primarily on highly subjective reports from relatives and on some direct observation of behavior. The favorable reports received from relatives are, of course, subject to all the errors of judgment resulting from failure to consider natural maturational changes and failure to differentiate between increased manageability and true changes in

[1] The authors wish to express their appreciation to Dr. Sidney Carter, of the Neurological Institute and Cerebral Palsy Clinic of the Presbyterian Hospital, for his assistance in the preparation of this report.

This report is based on a paper presented at the 1955 meeting of the Eastern Psychological Association.

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intellectual functioning or personality dynamics.

Karnosh and Gardner (2), reporting on four patients who were operated in order to accomplish extirpation of an invasive tumor near the center of the right cerebral hemisphere, also relied heavily on anecdotal accounts. No mention is made of the type of mental tests used and the impression gained is that these investigators depended in large part upon interviews with friends and relatives and on clinical impressions. Comparisons between pre- and postoperative test data are lacking.

One of the few reports in which objective psychological test data are presented is that of Cairns and Davidson (1) who found very dramatic and favorable changes in the mentality of their three patients who had a hemispherectomy performed. However, it would seem that their patients were initially far less retarded in intelligence than those with whom the present paper concerns itself. Moreover, a limitation of their work lies in the fact that they apparently did not include any personality tests as was done in the present investigation.

Subjects and Procedure

The present psychological study deals with four patients, two males and two females, who were between the ages of 14 and 24 at the time of operation. The entire cerebral hemisphere (the left in three cases, the right hemisphere in one), sparing only part of the thalamus and basal ganglia, had been removed in each patient. The decision to operate was based primarily on a history of uncontrollable seizures as part of a syndrome including hemiplegia and mental abnormalities, particularly mental retardation and behavioral difficulties. For each patient at least one battery of preoperative and one battery of postoperative tests are available. The mental tests, including measures of intellectual functioning, visual-motor performance, and projective material, were administered at different periods prior to and following the hemispherectomies.[4]

[4] Dr. Joseph Ransohoff and Dr. Sidney Carter presented a report on the operative procedure and physical results with three of these patients at the December 10, 1954 meeting of the Association for Research in Nervous and Mental Disease.

Results

For the sake of clarity the precise nature of the intellectual and emotional changes found in the present study may best be illustrated by presenting a fairly detailed account of one of our patients who was studied intensively. Three batteries were administered preoperatively and three batteries postoperatively spanning several years (from ages 4 years and 7 months to 15 years and 3 months).

The earliest records concerning this patient indicate right-sided focal seizures with spastic paralysis since the age of 10 months. A left parietal "sac of fluid" was removed during infancy. A history of encephalitis is indicated as well with an ensuing development of status epilepticus. Electroencephalogram results revealed the seizures to be originating from a focus in the left cerebrum.

Prior to operation on June 22, 1953, at the age of 14 years and three months, patient evidenced marked behavioral difficulties, was hard to manage, and assaultive at home. She was depressed, often cried, seemed apathetic, and complained of headaches and abdominal pains. It is not clear whether a suicidal act she attempted was a genuine effort to do away with hereself or not. A psychiatric examination found her to be "dependent, insecure, unstable, and depressed"; she was said to feel keenly her social isolation as she had very few friends, felt rejected by her parents and by people in general. A problem of sibling rivalry was also noted.

Her pre-operative diagnosis was: right spastic hemiplegia; right homonymous hemianopsia; right central facial nerve paresis. A left cerebral hemiatrophy was established by pneumoencephalogram. Seizures remained uncontrolled despite anticonvulsant regimens.

In June 1953 a complete hemispherectomy, including the caudate nucleus and globus pallidus as well as part of the thalamus, was performed. All of the left hemisphere was removed except for the medial part of the thalamus and the basal ganglia.

Postoperative neurological status remains unchanged. She now walks as well as previous to her operation. As was the case prior to surgery there is at present no movement of the right hand, but gross movements of the right arm were then and are now possible. Speech was evaluated and found to be good with no gross evidence of aphasia. A greater sensitivity to odors and taste is revealed. The patient has now been free of seizures for about 22 months. Anticonvulsant medications were gradually reduced and finally discontinued. It is reported by her family that she has improved significantly in her behavior as she has become "very quiet" at home, is more pleasant, and has no temper tantrums. The somatic complaints as well have disappeared, with the exception of an increased feeling of fatigue as reported by the school.

TABLE 1.—INTELLECTUAL EVALUATIONS OF PATIENT ON WHOM A HEMISPHERECTOMY WAS PERFORMED

Date of Examination	Chronological Age	Test	I.Q.
October 22, 1943	4 years, 7 months	Stanford-Binet	62
		Merrill-Palmer	69
November 20, 1944	5 years, 6 months	Stanford-Binet	71
		Merrill-Palmer	63
June 10, 1953	14 years, 3 months	Stanford-Binet	51
		Wechsler-Bellevue	44
Hemispherectomy performed on June 22, 1953			
July 9, 1953	14 years, 4 months	Stanford-Binet	54
		Wechsler-Bellevue	52
September 18, 1953	14 years, 6 months	Stanford-Binet	56
		Wechsler Intelligence Scale for Children	55
June 1, 1954	15 years, 3 months	Wechsler-Bellevue	59

This patient has been examined on six occasions, not consistently by the same examiner, over a period of nearly 11 years. Table 1 indicates in chronological sequence the results of the intellectual evaluations.

Inspection of table 1 discloses that the preoperative ratings are rather variable, ranging from a Wechsler-Bellevue I.Q. of 44 to a Stanford-Binet quotient of 71. This variability may be attributed to the patient's frequent daily seizures at this time. These are known to have a disorganizing effect on intellectual functioning. However, with the exception of the quotient of 44, which was obtained when the patient was complaining of headaches, she scored at least in the 50 range on all preoperative tests. Thus, when the single discrepant preoperative score is eliminated in making the comparative analysis, there is no significant postoperative change in intellectual functioning. The absence of a significant increase prevailed in spite of the practice effect which, as a result of repeated administration of the same form of tests, is expected to produce a rise in I.Q. It can also be seen that the postoperative quotients, although derived from three different scales, indicate a marked decrease in variability, doubtless reflecting the cessation of seizures.

The intra-test variability on comparable scales has by and large remained the same—where she previously scored low, she still does, and conversely so. The only marked gain in Object Assembly on the Wechsler-Bellevue must be eliminated for comparison purposes since it is the subtest most subject to the practice effect and considered virtually useless by the author of that scale for re-test purposes.

The Bender-Gestalt reproductions demonstrate some significant qualitative changes as can be seen from figure 1. Her difficulty with angulation as evidenced preoperatively is no longer as apparent. A greater motor control appears indicated as well, as the increased firmness of the lines shows. The oversimplification of the more complex Gestalten is compatible with a low intellectual endowment but is, curiously enough, not readily reflective of the perceptual difficulties so often encountered with brain-damaged patients.

In general, the Rorschach constellation did not change markedly, except for being somewhat more constricted than preoperatively. Former examinations revealed problems centering around passive-dependent needs, with the patient seeing herself at the mercy of elements around her, and the need to act out aggressively as a result of the unacceptability of these dependent needs. The basic personality picture has not been altered. The tensions and problem areas have remained. An interesting response to Card I, both pre- and postoperatively, may give a clue to the self-concept under the pressure of seizures and when free of sei-

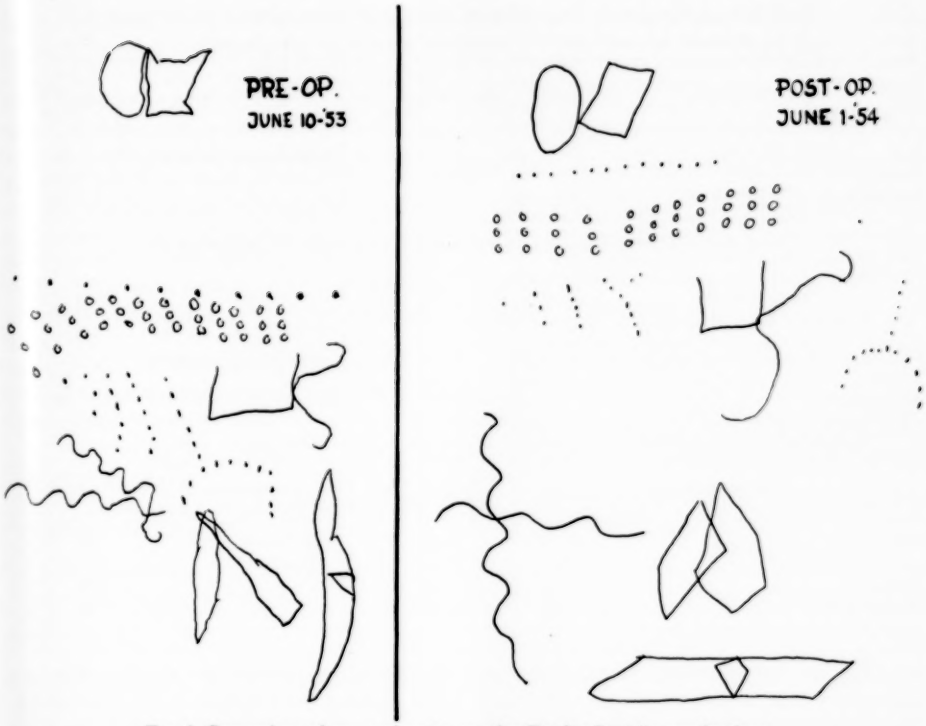

FIG. 1. Comparison of pre- and post-operative Bender-Gestalt reproductions.

zures. Thus in June, 1953 she saw "A lady and a man ... carrying an animal ... animal is very wild." More recently she saw in the same area, "Two people carrying an animal ... two men ... taking it away to the zoo ... to put in a cage ... to show the people." In connection with the last response it should be mentioned that the patient has attended innumerable clinics, conferences, consultations, etc., since the operation and has been the object of many a curious investigator.

Now to briefly summarize the findings for the other three patients. Table 2 presents the chronological age, the type and date of operation, and intellectual status at different times of testing.

It can be seen that in these severely retarded patients no loss in intellectual status occurred when an abnormally functioning cerebral hemisphere was removed. If anything, a slight and statistically insignificant postoperative gain in I.Q. has been obtained in some cases. The relation between verbal and performance quotients that existed preoperatively is essentially maintained following surgery. Contrary to expectation, the commonly employed indicators of cerebral abnormality, e.g., the Hewson pattern of deviation ratios and the Wechsler Mental Deterioration Index do not consistently reveal organic impairment in these patients. Rogers and Taylor (5) emphasize the fact that the effects of organic brain damage are not always revealed on psychological tests in the expected manner. For a detailed review of the application of psychological techniques to the evaluation of mental changes following cerebral abnormalities see Klebanoff et al. (3) and Yates (7). There is no discernible change in language functions in three patients with left and one with right hemispherectomies. Spatial evaluation generally remains at the same disordered level as preoperatively, or improves slightly. In personality dynamics these patients do not reveal any marked changes; however, an increase in awareness of being sick, disabled, and bodily mutilated generally

TABLE 2.—INTELLIGENCE TEST RESULTS FOR THREE HEMISPHERECTOMY PATIENTS

Male with left hemiplegia with uncontrolled seizures and mental retardation

Wechsler-Bellevue	C.A. 23–2, Mar. 3, 1954, Pre-op.	C.A. 24–9, Oct. 12, 1954, Pre-op.	Oct. 25, 1954	C.A. 24–10, Nov. 29, 1954, Post-op.
Full	46	45	Right hemispherectomy	46
Verbal	50	47		50
Performance	51	54		51

Male with right hemiplegia with poorly controlled seizures and left cerebral atrophy

Wechsler-Bellevue	C.A. 15–7, July 28, 1953, Pre-op.	C.A. 16–4, May 4, 1954, Pre-op.	May 18, 1954	C.A. 16–5, June 10, 1954, Post-op.
Full	65	68	Left hemispherectomy	71
Verbal	87	85		80
Performance	49	56		67

Female with right hemiparesis with spasticity, poorly controlled right-sided seizures, left cortical atrophy

Wechsler-Bellevue	C.A. 15–4, Dec. 17, 1953, Pre-op.	Dec. 20, 1953	C.A. 15–5, Jan 27, 1954, Post-op.
Full	49	Left hemispherectomy	56
Verbal	69		73
Performance	37		43

accompanies the operation. Some of the patients tend to become more constricted in emotional expression whereas others manifest less repression of basic impulses without necessarily acting out. A heightened feeling of morbidity and depression is characteristically a consequence of the procedure. The projective tests suggest that following the operation patients are in the process of attempting to establish a new psychic equilibrium.

SUMMARY AND CONCLUSIONS

In all of these cases the operation may be considered a success. The seizures ceased as a result of the procedure and patients no longer required all kinds of conventional and experimental anticonvulsant medication. No permanent increase in motor weakness was observed and sensory alterations were relatively minor. The patients were reportedly more pleasant and tractable. The intelligence test findings indicated that one is not justified, however, in anticipating a marked improvement when the patient is severely retarded preoperatively. The slight improvement occasionally noted is probably due to the elimination of the deleterious influences of the seizures and is not reflective of an increase in capacity. The fact that language functioning is not affected suggests the possibility that it was not the dominant hemisphere that was removed, but one which was atrophic and virtually non-functioning. It would seem that the removal of pathologic tissue, which presumably exerts a negative influence on neighboring cerebral areas, does not suffice to change the level of intellectual functioning if there remains an intellectually malfunctioning hemisphere. Thus, it is likely that only in those instances where there is near average preoperative intelligence, and presumably one normally functioning cerebral hemisphere, might there be a significant increase in I.Q. (6). The personality changes which were obtained in this study, namely, the increased feelings of morbidity, inadequacy, etc., would argue for a psychotherapeutic preparation of patients for the hemispherectomy and a supportive approach subsequently. Neglect of this area may lead to an increase in personality disturbance in spite of an apparent increase in manageability.

This investigation, which was limited to four retarded patients between the ages of 14 and 24, having uncontrolled seizures and hemi-

plegia, indicates that neither the claims of dramatic mental improvement occasionally found in the literature nor the pessimistic fear of a marked decline are justified as generalizations. It should be noted that the unequal intervals between time of operation and psychological testing of these patients, the lack of controls, the limitation of restricted age and intelligence levels, and the fact that the postoperative follow-ups have been carried on only for relatively short periods should encourage a cautious interpretation of the data. However, the importance of considering the interaction between the previous psychological make-up and the effects of the operation in any one individual seems well established.

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SOME SOMATIZATION PATTERNS IN REACTIVE DEPRESSION [1]

A Preliminary Report

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Many authors have written about the somatic symptoms that occur in depressive states. Brown (6). has described, with numerous case examples, the different kinds of hypochondriacal symptoms that may be present in cases of manic-depressive psychosis—depressed phase, or involutional melancholia. Kennedy (16) coined the term "manic-depressive equivalent" to describe somatic complaints with a more or less periodic course and minimal mood change towards depression; many of these cases apparently responded well to electroshock therapy. Fenichel (11) points out how fatigue and anorexia can occur as "affect equivalents" of depression. Denison and Yaskin (9) have alerted physicians and surgeons to the possibility of a basic depressive state being masked by medical and surgical complaints. Chamberlain (7) has referred to essentially similar cases as "cryptic" depressive states. Lindemann (18) has drawn attention to the somatic symptoms that may be the predominant clinical feature in "morbid grief-reactions." Stern et al. (26) have also commented on the tendency of people in the older age group to react with somatic symptoms to grief-producing situations, rather than with overt grief or guilt. There have been few attempts however, to inquire if there are any identifiable patterns in these somatization reactions and if so, what the determining factors of these patterns are. This preliminary report is meant as an attempt to answer the above questions, at least partially. It is postulated here, on the basis of fairly extensive clinical case study and suggestive supportive evidence from recent clinical physiological investigations, that in nonpsychotic reactive depressions with somatization reactions met with in General Hospital Psychiatric work, there are some identifiable patterns; and one can possibly relate these patterns to recognizedly important psychodynamic factors in depression, and their associated physiological reactions.

The patients studied were selected from Medicine "A" clinic of New York Hospital, New York city, and the medical out-patient clinic of Royal Victoria Hospital, Montreal, Quebec, Canada. Each patient had been thoroughly investigated by the internists and was subsequently referred to the psychiatrist for treatment. For purposes of this study, only those patients with a definite and relatively enduring depressive mood and a relatively constant major somatic symptom or symptoms of some duration were included. Cases with only emotional lability and transitory somatic complaints were not included.

Three patterns of somatization reaction were observed to occur with relatively great frequency. These were: pain or weakness of a limited portion of the body, the part affected having a special significance for the individual concerned, persistent headache both of the "vascular" and "muscle-contraction" type (27), and symptoms attributable to disturbance of function of the upper gastrointestinal tract, such as epigastric fullness, nausea, vomiting and, rarely, epigastric pain. Ten illustrative cases are presented here, with special focus on the constellation of factors relevant to the development of the change in mood and the somatization reaction. Cases 1, 2 and 3 showed the first pattern of somatization referred to above; cases 4, 5, 6 and 7 showed the second pattern, and cases 8, 9 and 10, the third pattern.

Case Reports

Case 1. Mrs. B. was a 30-year-old married Catholic American woman who came to New York Hospital with the main complaints of headache,

[1] Part of this study was carried out during the tenure of a Postdoctorate Fellowshop of the Life Insurance Medical Research Fund, whose financial assistance is gratefully acknowledged.

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pain in the right side of lower abdomen and back, frequency of micturition and tight feeling in the ankles, all of 3 years' duration. She also complained of frequent crying spells, poor sleep and excessive and easy fatigability.

Her symptoms dated back to the time when her mother died of "uremic poisoning," after a year of suffering from kidney disease. She had every one of the patient's symptoms and in addition, edema of the legs. The patient nursed her mother at home towards the latter part of her illness.

Mrs. B. was the oldest of three children. Her father died when she was very young, and her mother supported the family by going to work as a domestic and baby-sitter. She recalled how her mother never really loved her own children, and "actually cared more for the neighbors' kids." There was strict discipline at home and early indoctrination of the children in orthodox Catholic traditions. The patient's younger sister apparently "rebelled against this tyranny"; she used to run away from home when young and when she was 18 years old became sexually promiscuous. Her younger brother was the subject of "dominant" maternal overprotection; he was never allowed to go out with girls even when he was as old as 20, and his daily chores, including donning clothes, got helpful attention from mother. As for our patient, she submitted herself unquestioningly to mother's authority; "there was no point in arguing with her, for it made life only more miserable." When she was 18 years old, she was almost admitted to a nuns' order against her real wishes; only a sheer accident of circumstances saved her. She was forced to discontinue her friendship with the boy she was going out with, "because he was not religious enough." Her mother used to destroy all his letters addressed to the patient, without even letting her know about it.

Following her mother's death, Mrs. B. became depressed and soon afterwards developed the said complaints. It was of interest that her identification with her deceased mother was so complete that she used to leave all her house work unfinished, and rush over to her brother's house to help him with his daily chores, just as her mother was wont to do.

Case 2. Mrs. J. was a 30-year-old married Jewish American woman who came to New York Hospital with the complaints of pain in the lower back radiating down the right leg, tiredness, poor sleep, etc., all of 2 years' duration.

The complaint dated back to the time of death of her older sister from "cancer of the spine," after 6 months of suffering from the same complaints. The sister was the oldest member of the family, and functioned as a mother-figure to the patient for the greater part of her childhood, as their mother died early. The patient considered her sister "too bossy," but still "loved her dearly." Following a family quarrel, they were not on talking terms for a long time; when the nature of her sister's illness became known however, the patient became more concerned and even guilty, and resumed a friendlier relationship. Still, whenever her sister suggested she go down to Washington, to help her with housekeeping and look after her 6-year-old daughter while the sister was in the hospital, the patient did not care to go, rationalizing her inability in one way or another. Two weeks before she died, her sister implored our patient to go down and she could not but comply.

Soon after her sister's death, the patient became depressed with ideas of guilt for not having helped her sister more actively, and developed the said symptoms.

Case 3. Mrs. P. was a 45-year-old married Catholic Canadian woman who came to Royal Victoria Hospital for weakness in the left arm and left leg, crying spells, easy fatigability and feeling disinterested in social activities, all of 1½ years' duration. Her husband had been a semi-invalid for many years, suffering from an inoperable glioma. The patient was made aware, in unambiguous terms, of the poor prognosis of the case. She cared for him at home for over 3 years, anticipating his death any minute. On a few occasions, when he would faint and breathe "funnily," she would rush him to the hospital, feeling that was probably the end coming, but he would rally round after a few hours or days, to be taken home again. One and one-half years before she sought help for her symptoms in the clinic, he suddenly developed paralysis of the left half of his body, and his general condition also deteriorated rapidly. Mrs. P. was persuaded, much against her wish, to put him away in a convalescent hospital. It was in this setting that she developed the depression and the associated somatic complaints already mentioned.

Comment. In the above three cases, identification with the deceased or anticipated dead is clear. The basis for identification is probably as much out of a sense of guilt and self-punitive needs for entertaining negative feelings towards the love object, as out of a need to preserve a relationship, however primitive it might be, with the lost love object. The cases were also similar in that their premorbid personality was of the hysterical type, though they did not have the symptoms they came to the clinic with, at any time before.

Case 4. Miss S. was an unmarried Polish-born Jewish woman 26 years of age who came to New York Hospital with the major complaint of headache of a generalized nature and of the "muscle-contraction" type(27), of 1 year's duration. She also complained of "feeling gloomy, and as though there is no future or even present for me." The depressive features, along with the intractable headache, came on following the sudden death of her mother from a "heart attack."

Like many of her group, our patient went through a lot of hardships in Europe during and after the

war years, and after a long and patient waiting, managed to emigrate to the U. S. A. with her mother and older sister. Driven by a strong need to regain some of her "old country" social status (lost consequent to her migration), and by dint of diligent application, she became fairly proficient in English and secured a very good job in a private company. Her conscientious effort and honesty got appreciative attention. Socially, however, she was almost totally nonparticipating, and even hostile. She felt resentful and envious of her aunt and cousins, who had been in the U. S. A. for a much longer time, but apparently did not offer any assistance to the patient and her mother, when they newly arrived in the country.

Even in her relationship with her mother and sister there was evidence of a good deal of repressed resentment, though outwardly she was noncomplaining and "easy to get along with." Ever since she was a child, her older sister had been apparently "sick from one thing or another," and so was used to greater attention from her parents. This did make our patient feel jealous and resentful towards her older sister, though she would not readily admit it. As they grew up, other factors only made this negative feeling worse. Miss S. belonged to the group of Orthodox Jews, and the whole family believed in practicing the teachings of the sect religiously. In the matter of the engagement and marriage of sisters in a family for example, it was considered wrong for the younger girl to get engaged or married before her older sister. In our patient's case, her sister was older by 3 years and at the time the patient was visiting the clinic, was "not even going out steady." The patient was better-looking, smarter and had a better job. Though many boys were interested in her, she would not dare to break the tradition, and go out with them for fear of becoming too emotionally involved. She did feel however, that her mother was not encouraging her sister actively enough in heterosexual interests, and felt as much resentful towards her, as towards her sister.

About the time the patient and her family managed to get "settled," with a decent place to live in and both the girls going to work, her mother died all of a sudden from "a heart attack." The patient was "left with no understanding or friendly person in the world," except her sister who was in need of emotional support herself. It was in this setting that she developed the mood change and the said complaints.

Case 5. Mr. S. E. was a 45-year-old married Jewish man of Polish birth who came to New York Hospital for generalized headache of "muscle-contraction" type, feeling "blue," tired, and without any ambition, all of 1 year's duration. The symptoms, along with depressive mood, came on in the wake of the departure of a close (probably the only close) buddy and workmate who left town to start a small business of his own. There was another contributory factor that was relevant to his mood change. His boss had been promising him a raise in salary almost every year for the preceding 3 years, only to disappoint him ultimately. When his friend left, the boss could not procure a substitute readily, and Mr. S. E. had to do the greater part of the work in the store almost unaided. He felt he was entitled to a raise more than ever before, but being nonassertive and insecure about his position in general, never dared raise the issue though he was "burnt up over it." Mr. S. E. had been in New York city for 4 years before he was seen at the clinic, but had very few friends even among the Polish. Even the restricted social life was characterized by marked restraint and minimal emotional interpersonal contact. "I don't bother with people. I often hear people say nasty things about us just because we are refugees, but I don't say nothing. What good is argument going to do? It will only spoil my record, and I would never like that to happen." His premorbid personality was that of an obsessive-compulsive type.

Case 6. Mrs. R. was a 50-year-old married Catholic Canadian woman who came to Royal Victoria Hospital for severe headache of both the generalized "muscle-contraction" type and bitemporal "vascular" type of 5 years' duration. The headache had proved resistant to the routine medications, including ergot preparations. In addition she also complained of tiredness, poor sleep and diminished sleep, all more marked before her admission to the clinic.

The patient's symptoms, along with a depressive mood change, came on following her development of a discharging sinus in her right breast.

Mrs. R. was born sixth in a family of 22 children, though only 9 were living at the time of her visit to the clinic. Her parents were almost fanatically Catholic. Father was a detached, cold and "very harsh" man. The girls were not allowed to go out with boys, even when they grew up to be adults. The patient finished 8th grade and stayed at home to help her mother with housework. When she was 18, she was admitted to a nuns' order, and would have continued to live as a nun, had it not been for the fact that 9 months after her initiation she became very sick with "peritoneal condition" and was advised to go back to her home, and against going back to the nuns. When she was 31 years old, she got married to a widower, 25 years older. He had four grown-up children through his first wife, and was quite bitter about their ingratitude to him when they became older. He was firmly resolved not to have any more children through his second wife. This resolve came as a blow to Mrs. R., with her deep beliefs in Catholic teachings. She believed strongly that it was a sin for a woman not to have any offspring at all, and end the particular generation. Her developing a discharging sinus with fear of malignancy apparently flared up her guilt feelings and the feelings of sinfulness, and served to precipitate the mood change with the other symptoms. She was hence put on

electroshock therapy, with dramatic improvement of her symptoms to the point of almost total disappearance. "It is funny, doctor, that none of the pills I have been taking for these 5 years helped my headache, but this treatment has stopped my headache like magic."

The patient's premorbid personality was that of an obsessive-compulsive type; and she had always been religious, conscientious, overconforming, superficially charming and ingratiating.

Case 7. Mrs. L. T. was a 25-year-old married Catholic woman from British West Indies, who came to Royal Victoria Hospital for "throbbing headache in both the temples" and a more generalized dull ache, most marked in the occipital region, of 3 months' duration. This major symptom, along with a fit of depression, came on after she lost her 3-year-old son, following a short bout of illness.

The patient was born in British West Indies, and lived there till she was 20 years old. When she was 19, she had an illegitimate baby through a boy she had been friendly with for many years. He accepted parentage of the child, and offered to marry her; but her mother apparently felt he was "irresponsible and dishonest" and forbade her daughter to ever see him again. A year later, on her mother's advice again, the patient came to Montreal to live with her older brother and procure a job. A year after her arrival in Montreal, she became friendly with a man of her age from another part of British West Indies. Though she was not seriously considering marriage right then, he apparently talked her into it. As early as 3 weeks after marriage, he started talking about divorce, to her utter amazement. Since then, their marital life has been one continual story of quarrels and arguments. Though he was totally indifferent to her feelings and complaints, openly admitted his "affairs" with another woman, and often physically abused her, she continued to live with him. When he learned she was pregnant, he made her try all possible means to get rid of it; "he did not even care to visit me in the hospital, when I had the baby." Since having her boy, she apparently conceived "at least four times," but got rid of all of them on his insistence.

One could readily see her markedly masochistic personality structure, and also her attempts to cement the tenuous marital relationship with the help of offspring.

Comment. Three of these four patients with headache as the major somatic complaint in addition to depressed mood showed a marked obsessive-compulsive personality structure. The aggressiveness which came out later in the interviews was covered up in all of them by superficially charming, polite, and ingratiating behavior.

Case 8. Miss A. was a 25-year-old unmarried Jewish American woman who came to New York Hospital with the complaints of difficulty in eating—more marked outside home, epigastric discomfort, and nausea often leading to vomiting. Forcing food invariably worsened the symptoms. These symptoms, along with a depressive mood change, came on following her being jilted by her boy-friend, about a year before she sought help in the clinic.

The patient was born a co-twin, fourth in a family of five children. From a very early age she apparently became aware or was made aware of being quite different from her twin sister. The sister was considered the prettier and also the smarter. She was obedient, unselfish, and pleasant-mannered, while our patient was her opposite in every one of the above respects. Miss A. started dating much later than her twin sister and had difficulty in establishing an enduring relationship with any boy. This was mostly because of her possessive attitude to her boy-friends, and lack of consideration for their feelings. When at last she did find someone showing relatively sustained interest in her, she was both happy and proud. This relationship lasted for 10 months; she became very fond of him and let him go farther in the intimacy of heterosexual relationship than any of her other boy-friends. While she was planning on getting engaged and ultimately marrying him, he "broke off" the relationship, and this made her as much hurt and furious, as depressed and disinterested in any further social activities. "What burned me up was, he never told me exactly why he broke off without even an explanation; he just wanted to have a good time, and that was all, I guess."

Case 9. Mrs. C. B. was a 39-year-old married Negro Protestant woman who came to New York Hospital with the complaints of frequent attacks of nausea, bloated feeling in abdomen and epigastric discomfort following food, sometimes amounting to pain. She also complained of frequent crying spells, feeling tired and without any ambition for doing anything. These symptoms, along with a depression in mood dated back to the time she went to live with her second husband—a white man living in a predominantly white-inhabited area. She not only felt thrown out by her own relatives and Negro friends, but had a distinct feeling of nonacceptance by the local white group. She felt lonesome, depressed and resentful towards the neighbors and her husband's relatives. The more her husband tried to cheer her up with gifts, new T.V. set, etc., the worse her depression and other bodily symptoms became. "I was very happy working and living in my old place; I know these people are going to say I am having a wonderful time, not having to work because I am married to a well-to-do white man."

She was once married to a Negro man, who apparently drank to excess and treated her brutally; "still I lived with him, because I didn't want my folks to say our marriage was a failure." He finally walked out on her, and when she was in a miser-

able state following this, Mr. C. B. took pity on her, helped her financially and offered to marry her. He was himself a divorcé, and a World War II veteran on a substantial disability pension. The patient got married to him after some hesitation, but preferred living in her own apartment. She also kept working as a sewing-machine operator. "I have worked all my life; nobody can say I ever lived on charity. I worked and paid off all my first husband's bills and debts." A few months after marriage, Mr. C. B. talked her into moving into his home, and also persuaded her to discontinue going to work. This was the setting in which she developed her depressive feeling and the upper gastrointestinal symptoms.

Case 10. Mr. L. was a 64-year-old married Catholic Canadian rail-yard worker who came to Royal Victoria Hospital with the main complaints of pain in the epigastric region, postprandial upper-abdominal fullness, and occassional attacks of nausea and vomiting, all of a few months' duration. Though peptic ulcer was suspected on clinical grounds, it was ruled out by further investigations.

The symptoms dated back to sometime in May '54, about 5 months before his admission to the clinic, following an "attack of angina." He was examined by his company doctor at the time he had the so-called angina, and in spite of nothing definitive being found, was advised to take 1 month's rest. In the meantime, the patient came to learn that the company executives were planning to make him retire 1 year ahead of the scheduled period for retirement, namely 65th year of age. Though this piece of information, he asserted, did not bother him very much, the fact was that he could not resume his work after the month's rest, and developed the said symptoms. He also became "moody," easily upset by relatively trivial affairs like his daughter's domestic quarrels, son's mild backache, etc, which very often provoked crying spells. He also began losing weight and sleep, gradually. It was of some interest that his symptoms were worse in the mornings.

He had a very good work record on the whole; and his premorbid personality was characterized by overconformity, inhibited assertiveness and a compulsive attachment to his work.

Comment. Cases 8 and 8 exhibited by a hysterical type of premorbid personality structure. While the clinical data in case 8 would suggest considering her symptoms as manifestations of denial of oral incorporative cannibalistic wishes directed to her love-object, namely her boyfriend, in cases 9 and 10, the symptoms would appear to be manifestations of denial of oral passive-receptive longings, underlying the compulsive attachment to work.

Discussion

These 10 cases would fall in the category of nonpsychotic reactive depressions, with relatively obvious precipitating factors. Many authors (16, 20, 23) have pointed out how, from a psychodynamic point of view, the difference between reactive and endogenous depressions is more one of degree than kind; therefore, psychodynamic factors that are important in the understanding of psychotic depressions may be conceived to be of greater or lesser relevance in neurotic reactive depressions also. Viewed from this angle, the symptoms of this illustrative group of patients could be conceptualized as determined by three of the important dynamic components of depression, namely, identification phenomenon, inward-directed aggressiveness and oral longings, both of passive-receptive and aggressive-cannibalistic kind.

To take each one of these separately, identification phenomena have been reported to occur in endogenous depression (2, 11) and also in "morbid grief reactions" (18). Cohen et al (8) have pointed out how, from a developmental point of view, the traumatic phase in depressions, as contrasted from schizophrenia, is at the stage of increasing differentiation from mother and establishment of other object-relationships. It is conceivable that this is probably the reason why a separation from a mother-figure or a love-object in later life with resulting depression is accompanied by a need to maintain a continued relationship with the lost love-object, even if it be by a relatively primitive mechanism like identification. As pointed out already, another possible determinant in the identification phenomena is the guilt and self-punitive needs for entertaining negative feelings towards the love-object, which feelings were more or less overt in the three cases reported in this particular group.

The aggressiveness of the depressed patient has been widely commented on (2, 3, 4, 11, 18, 21). The relationship between repressed rage, resentment and aggression and migraine, has been pointed out by almost all authors (12, 13, 17, 19, 22, 24, 25) who have studied the dynamics of the syndrome. In his recent article (13), Friedman has remarked about the similarity of the "muscle-contraction type"

(27) of headache to the vascular type or migraine, from the point of view of the importance of repressed aggressiveness as a dynamic factor. Headache and different kinds of sensations like, "tightness round the head," "pressure on the top," etc., are commonly complained of in depressed states (16). Out of 100 randomly chosen depressive reactions of all types, including depressed phase of manic-depressive psychosis and involutional melancholia, admitted to the Allan Memorial Institute, the author found headache or other head sensations the predominant somatic complaint in 44 cases. Out of the four cases reported here, two showed evidence of vascular element in the mechanism of headache and the muscle-contraction element was evident to a greater or lesser degree in all the four.

As for the mechanism of production of this somatic symptom in depressed states, on a psychodynamic level, at any rate, the repressed and in-turned aggressiveness would appear to be of considerable importance. Even on the physiological level, there is suggestive supportive evidence for the above hypothesis in some of the more recent studies on depression. Rado (21) has postulated the concept of depressive syndrome as a form of "emergency dyscontrol," and also pointed out that a crucial dynamic conflict in depressions is that between the forces of "coercive rage" and "guilty fear." Funkenstein (14) has corroborated, in a way, the dynamic postulates of Rado quoted above, with his observations of the changes in various indices of cardiovascular function in depressed patients and also in normal subjects under conditions of "anger turned in" (15). He has suggested, on the basis of his studies, that depression, rather than anxiety-state, represents the counterpart in man, of Cannon's "fight-flight" reaction in animals. In line with the above findings, while studying the blood pressure variations associated with various feeling states during psychiatric interview in normotensive subjects, the author (5) noticed the association of the feeling states of depression and resentment with a significant vasopressor response in an impressive number of instances. It is conceivable that the increased sympathetic downward discharge associated with depression, suggested by the above data, may in turn set up or increase already established afferent streams of impulses from the nerve endings in the muscles of and around the head, and also the cranial blood vessels (13); these afferent impulses may in turn influence the threshold for head pain by their effects on the "central excitatory state" (27).

The relationship between oral zone of interaction and depression is also a well recognized one (1, 2, 3, 4, 8, 11). Denial of either the passive-receptive or aggressive-cannabalistic oral longings might possibly determine the motility and other functional disturbances of the upper gastrointestinal tract, and lead to symptoms of nausea, vomiting, epigastric fullness and even pain. Wolff and his co-workers have shown how the physiological mechanisms associated with "hypodynamic pattern" of gastric function and the "ejection riddance pattern" involving the stomach can cause many of the above-mentioned symptoms (28). It is worthy of note that the symptoms of the last group of patients (cases 8, 9 and 10) were not just loss of appetite or aversion to food, that one usually associates with every case of depression. They had, on the other hand, definite epigastric discomfort sometime amounting to pain, with varying degrees of nausea.

It is of considerable interest that most of the patients showing somatic symptoms, mainly determined by the dynamic processes of identification (cases 1, 2 and 3) and denial (cases 8, 9 and 10) manifested a hysterical personality structure, while those with symptoms based on the effects of in-turned aggressiveness on the musculature and vasculature in and around the region of the head, were mostly of an obsessive compulsive type. This suggests an influence of the premorbid personality structure on the somatization pattern in these cases. The hysterical personality, characterized by emotional immaturity, readiness to dissociate and relatively unsophisticated and fluid habit patterns, might be expected to choose relatively primitive mechanisms like identification and denial more readily. An obsessive-compulsive character, on the other hand, has a relatively rigidified personality structure, his rigid compulsive systems binding most of his aggressiveness. Any unexpected increase in the aggres-

siveness or "guilty fear" secondary to "coercive rage," associated with depressive episode, is, for want of readily available defense mechanisms, probably more likely to be channelized along the sympathetic nervous system.

It is by no means implied that these are the only patterns of somatization that occur in depressions, or that the psychodynamic considerations discussed here are the only factors of importance in understanding somatization reactions in depressive syndromes. It is only attempted to show that there are some identifiable patterns, and that a psychodynamic orientation of study is possibly one of the fruitful approaches to the problem.

Summary

It is postulated here that there are some identifiable patterns in the somatization reactions occurring in nonpsychotic reactive depressions, met with in general hospital psychiatric experience. Some of the recognized psychodynamic factors of fundamental importance in all depressive reactions and the associated physiological responses are suggested as the main determinants of these patterns. Ten illustrative cases are described briefly with particular emphasis on the factors leading to the mood change and the somatic complaints.

Acknowledgement

The author wishes to express his profound gratitude to Dr. D. Ewen Cameron and Dr. Clifford W. Scott, of Allan Memorial Institute, for reading the original manuscript of this paper, and suggesting alterations and refinements.

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MOTHERS OF YOUNG MALE SINGLE SCHIZOPHRENIC PATIENTS AS VISITORS IN A MENTAL HOSPITAL [1]

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This paper reports some observations and impressions of 22 mothers of young, male, single, schizophrenic patients as they appeared in the mental hospital setting in which their sons were confined. Ages of the patients ranged from 18 to 32 years, average age being 23.7 years. Study of these mothers was undertaken primarily for the purpose of exploring what direct observation of relatives and patients visiting together in a mental hospital might add to the understanding of some of the patients' interpersonal relationships. Of interest also was the amount and kind of participation in activities, other than visiting with patients, that relatives engaged in while in the hospital that might provide clues to their attitudes toward the patient and his illness.

Some direct observations of patients and relatives visiting together, done previously, had produced vivid impressions of the nature of the interpersonal relationships between patient and visitor (3). How valid impressions so obtained were in terms of evaluations derived by other means, e.g. interviews, whether all visit situations could be observed to produce some indications of the relationship between visitor and patient, whether they were any more or less illuminating than the general impressions of ward personnel were questions raised and for which some answers are sought here.

In this study, material from social work interviews with the mothers, impressions of them gained from nursing personnel and general information about their participation in the hospital activities open to them were added and compared to those impressions gained from direct observation of their visits with their sons. It was hoped that in this way some evaluation of the validity and usefulness of direct observation as a tool for learning about the problems and satisfactions of a patient's interpersonal relationships might be achieved.

Four psychiatric social workers were the main participants in the study: one, the writer, engaged in research only, was responsible for general direction of the project, made the direct observations and collected the data. Other members of the hospital staff also participated in providing their impressions of these mothers as well as ideas and suggestions in the conduct of the study. Dr. Robert Reid conducted group meetings with the mothers, which the writer recorded. The other three social workers, regular members of the hospital staff, carried some of the mothers in case work treatment, reporting their material to the writer after each interview.

Mothers of young, male, single, schizophrenic patients, rather than another or random group of relatives, were selected for several reasons. First, mothers of patients are frequent visitors and are more likely than other relatives to be daytime visitors, thus providing maximal opportunity for observation. Second, much of the literature about mothers of schizophrenics emphasizes the importance of the mother-child relationship in the development of the illness and/or points out specific characteristics and attitudes found to be typical of such mothers. John Rosen states (6) "A schizophrenic is always one who is reared by a woman who suffers from a perversion of the maternal instinct." Frieda Fromm-Reichmann says (2), "The schizophrenic is painfully distrustful and resentful of other people, due to the severe early warp and rejection he encountered in important people in his infancy and childhood, as a rule, mainly a schizophrenogenic mother." The most common conception of such a mother

[1] This study formed a part of a Psychiatric Social Work Research training program established at the Boston Psychopathic Hospital by the Department of Psychiatric Social Work of the Simmons College School of Social Work through the Training and Standards Branch of the National Institute of Mental Health. For a report and evaluation of the training program see *Toward a Research Training Program in Psychiatric Social Work*, by Jean M. Arsenian and Georgina D. Hotchkiss.

is that she is over-solicitous, over-protective, over-anxious, domineering. This conception is supported (although not wholly endorsed) in the literature by Despert (1), by Reichard and Tillman (5), and by Tietze (7), and is shared by the personnel of a mental hospital. Personnel are apt to attribute a specific kind of smothering, over-solicitous visit behavior to her and refer to it as "typical." In the hospital setting she is deemed to be persistently interfering, aggressive and demanding with personnel, domineering and possessive with her son.

Thus, by choosing these particular mothers for observation and study, it was possible to compare impressions derived from direct observation of their visits with the already established conceptions of them, as well as with the material derived from social work interviews with them. The mothers chosen were those of whom there were no known factors that would limit their visits, as distance, illness, etc.

Direct Observation of Mother-Son Visits

Two visiting hours daily were allowed in the hospital in which the study was carried out, one in the afternoon, the other in the evening. Visiting was done on the wards, no special areas being assigned for it. The observer chose a position as near to the visiting pair as possible but attempted to remain inconpicuous or preoccupied and made no explanation of her presence. Obviously, the number of observations possible for each pair varied according to frequency of visit and accessibility to the observer of the visit position. Short observations, recorded descriptively, were employed. Observations made in the earlier study were recorded on charts noting type and duration of interaction within certain categories, as well as by descriptive summaries. The descriptive summaries focused on three aspects of the visit situation: 1) the direction of mother's attention, whether directed toward the patient, toword others, or elsewhere; 2) the nature of her verbal or motor attention or participation, as arguing, cajoling, recounting, feeding, grooming, eating with, etc.; 3) the apparent affect accompanying attention or participation (or lack of it), as anxious, purposeful, warm, sweet, bland, indifferent, disgusted, resigned etc.; 4) patient's apparent response to her, as friendly, accepting, responsive, verbally hostile, little or no response, retreat etc.

From these observations roughly five types of mother-son visit patterns were noted.

1. The *"over-solicitous, hovering, domineering"* visiting mothers (previously referred to as the prototype of mothers of schizophrenics) were the most conspicuous, the most readily observed but, in this group, not the most numerous. It should be remembered throughout this study that the criteria for selection of these mothers included only their presence in the hospital and not, as in the Tietze study (Trude Tietze, *op. cit.*), intelligence, articulateness and willingness to keep appointments. Three of the 22 were so labelled by virtue of the following kinds of visit techniques: they visited constantly, often daily, sometimes twice daily. Average for the three: 33.7 visits in a one month period. They brought quantities of food, urged the patients to eat it and hovered over them while they did. They urged their sons to change into clean clothes they brought; one put them on for her son if he didn't respond (or if he was slow in so doing). They contacted ward personnel, often inquiring into every detail of their sons' hospital life—treatment, activities, eating and sleeping habits etc. They made special requests, called personnel attention to such matters as a shirt brought in that he was not wearing, the orange juice he did or did not drink, etc. They focused all their attention on their sons, speaking to others (visitors and other patients as well as personnel) frequently but only on matters pertaining to "my boy." They carried on these activities outside the ward setting, often stopping in the lobby to address similar inquiries and comments to any personnel who happened to be passing through and to other visitors waiting there.

Responses of patients to this kind of mother were difficult to evaluate by observation. None expressed or evinced pleasure at her arrival, but were noted by the observer hanging around the ward door at visiting hours apparently waiting for her. During a visit, they sometimes retreated to another part of the ward (one usually doing this after the food was eaten)

but overt acts of rebellion toward this type of treatment were rare.

2. The second kind of visiting mother appeared in the visit situation as *"sweet, indulgent"*, anxious to please her son. They were not so conspicuous as the over-solicitous type already described but more numerous. Some of the eight so labelled visited frequently and regularly, others relatively infrequently; none was such a constant visitor as the three "over-solicitous" mothers. Number of visits for this group ranged from 5 to 26, in the first month of their sons' hospitalizations. They also brought food. They were differentiated from the "over-solicitous" mothers in that their advances seemed directed toward providing what the patients wanted rather than toward forcing or urging what they considered good for their sons. They offered food but did not push it—but looked hurt if the patients did not accept it. By inquiry, trial and error, they seemed to try to provide their sons with everything they wanted. Sometimes their indulgence ran afoul of hospital regulations—one such mother continued to bring her son food even after she had been requested by the doctor to desist, because, she said "he wanted it—he said if I didn't bring it he'd . . . " Another, whose son demanded progressively more difficult things for her to provide, commented to another relative "he's just like this at home—give me—I want—give me—I want." Their contacts with personnel were apt to be friendly but not critical or demanding—requests framed in an "if it wouldn't be too much trouble" manner. They inquired for other patients, often included them in their ministrations of food and attention.

Sons of these mothers, in general, if in reasonably good contact, seemed to welcome their coming openly. Greetings of a kiss or a hug or an enthusiastic "Hi, Ma" were often initiated by the patient, even though demands and rebelliousness might follow. One mother described her son's response to her "he welcomes what I bring that he wants—candy and nuts—and then he chases me away." It is possible that the difference in visit frequency among these mothers could be accounted for in their success or failure to meet patient demands, or in the amount of appreciation he showed.

3. A third visit pattern was that of the *"seductive"* mother. Seductive qualities in visit techniques of mothers falling in the first two pattern groups were apparent (and will be noted in the more detailed description of individual visit patterns in a later section) but one mother was so consistently and flagrantly seductive in her visit approaches that no other qualities seemed to be discernible. Young looking, stylishly dressed, lightly veiled, she sat on the patient's bed applying powder and lipstick at frequent intervals while he watched. She responded to his advances, with coy glances and kittenish pouts. Sometimes he put his face close to hers, rubbing his nose gently with hers saying "tell me about you now." Such behavior was puctuated with angry outbursts from the patient, which mother rode out either with outward calm and increased self-attention, or with quick and angry retorts, as to the patient's "why am I here," a response "that's what I'd like to know."

4. A fourth type of visiting mother was labelled *"intent, controlled, quietly purposeful."* Three such mothers visited quite frequently, but were difficult to observe since they usually took the patients to a private visiting area, away from the other patients and personnel. They visited 13, 20 and 22 times respectively in the first month of their son's hospitalization. In demeanor and expression they were set and rigid; they focused their attention on the patient but did not appear to be solicitous in manner, gesture or approach, gave no evidence of emotional reaction to the patient or to events around them. Sometimes they appeared to argue with the patient, to be selling a point but the verbal content was rarely obtainable due to the careful choice of private visiting conditions. One of the three, however, who visited regularly on Monday, Wednesday and Friday but never on Tuesday or Thursday, had one comment delivered without use of facial muscles, that the observer heard many times as she passed by, "relax, and don't think about those things." These mothers made few contacts with ward personnel; they marched in and marched out. Their hospital contacts were more likely to be with the patient's doctor, or, if things were not to their liking, with higher echelon, up to and including the governor.

Neither a positive nor a negative reaction to

these mothers' visits could be discerned by watching their sons; they, like the mothers, kept impassive expressions, saying what they had to say (or saying nothing) with facial expressions devoid of apparent emotion.

5. By and large, the mothers whose visiting patterns have already been described (except the seductive mother), entered into the visiting situation with purpose or emotion or both, and focused their attention on the patient visited. The fifth type of visiting mother, called the *"removed, non-participating"* mother, showed, on the contrary, neither purpose nor emotion in the visit situation and focused little attention on the patient. Seven mothers appeared, variously while visiting, bland, bored, resigned, distant, and in one instance frightened. They engaged in little verbal or motor activity, made few advances, made gifts by depositing rather than giving or urging, paid some attention to activities around them but little or none to their sons. Although not the most frequent visiting mothers, they visited oftener than their visiting pattern would lead one to expect, the seven averaging seven visits in a month's period (two having visited only three times in the month and one twelve times). They did not contact ward personnel with inquiries regarding the patient but occasionally addressed socially polite comments to them on such subjects as the weather. Two of these mothers addressed comments to the observer as she jockeyed for an observational position. One commented "he smells, why don't they give him a bath?" The other explained that the patient's illness was responsible for her poor health. Their visits were brief, on occasion a matter of 5 or 10 minutes and rarely the full hour allowed.

Responses of the patients to these visit techniques varied. Three patients seemed to try to draw attention by asking questions, by telling of hospital doings or by talking a great deal. The other four paid little attention to mother's presence, either walking away from her to another part of the ward or ignoring her by continuing to look at a magazine or eat an apple without so much as a glance in her direction.

Observations and Impressions of Mothers Obtained from Nursing Personnel

Comments about the mothers were obtained from head nurses on the wards (occasionally from student nurses as well) by a simple questionnaire, sometimes presented in printed form and at other times more informally by word of mouth. Questions included "Do you know John Jones' mother by sight?" "Have you ever talked with her—if so about what?" "What kind of a visitor do you think she is and how does she affect your relationship to the patient?"

In general, the nurses had noticed, had had some communication with and had opinions about mothers in the first three visit pattern groups: the "over-solicitous, domineering" mothers, the "sweet indulgent" and the "seductive". But the mothers in the fourth and fifth pattern groups, the "intent controlled" and the "distant, non-participating" mothers, were in many cases unknown to the nurses, or if known by sight only elicited such non-committal comments as "yes, I've seen her but I don't know anything about her." Thus almost half these much talked-of mothers left little mark in their comings and goings on the wards.

Among the three visit pattern groups with which they were acquainted, the nurses frequently used the same descriptive adjectives as the observer. They were particularly vociferous in describing and commenting on the three "oversolicitous" mothers, which, in view of the kind of activity they engaged in, is not surprising. (One of the three was observed accosting three patients, two nurses, one attendant, three doctors, the receptionist and the observer with a question regarding her son during and following one visiting period.) As annoying and time-consuming as personnel must find such behavior, greater feeling was directed toward what they consider to be the harmful effects of her attitudes on the patient. Comments ranging in intensity from "Why can't she give him a chance to grow up?" to "If she'd drop dead we might be able to help him" were frequent. Pity for the patient subjected to such visit techniques and condemnation of mother admittedly affected the relationship between nurse and patient. Some said they attempted to treat the patient in an opposite

fashion from that of his mother, as one nurse said, "I make sure he is allowed to make his own decisions," another, "I treat him like a grown-up person." It was reported that patients as well as personnel reacted with hostility toward this type of mother, that "they cheered when Donnie hit his mother."

The "sweet indulgent" mothers on the other hand, although also well known to ward nurses, did not elicit such violent reactions. Nurses were apt to react in a positive fashion to them. Such expressions as "she seems nice," "she seems interested in him," "he seems glad to see her" were common. Only occasionally did they evaluate such maternal visiting as bad for the patient; as in one case where they felt that a mother was too "wishy-washy" with her son and felt they should counteract this with firmness.

The visiting techniques of the "seductive" mother were also noted and condemned. And again, nurse-patient relationship was admittedly based on evaluation of mother's visit techniques. Of this patient, one nurse commented "I make sure that I never use any feminine wiles on him, although I'm not above it with some patients—we stay on a strictly pal basis."

The vague or non-existent impressions elicited from nurses about the fourth and fifth types of mothers (the "intent controlled" and the "removed non-participating") were readily explained by the observer's difficulty. The three "intent controlled" they sometimes knew by sight but ventured no speculations about her. "I've seen her—she goes off in a corner," was a typical comment. The "removed non-participating" mothers were even less known; five of the seven were not known by sight—one was thought to be the patient's sister; comment about the other two reflected no reaction to their presence.

Impressions of nurses, then, corroborated those of the observer that any evaluation of a "typical" mother of a schizophrenic as "over-solicitous and domineering" based on this group could only be derived from the behavior of a few and not from a composite picture of all 22. Since the "over-solicitous" mothers made their presence felt so constantly and persistently, it would not be surprising if their numbers had been overestimated.

Participation in Group Discussion and Social Work Interview Opportunities

In addition to visiting with patients, relatives may become acquainted with and enter into the life of the hospital in other ways. They may accompany patients to some of their activities as occupational therapy or evening entertainments; they may talk with members of the hospital's staff—doctors, nurses, attendants and others—on their own initiative and some may be requested to give information about the patient. They may take part in some discussion groups set up for them; some may have regular appointments with social workers to talk over problems pertaining to the patient or to themselves.

The extent to which some of these mothers entered into the latter two types of participation—discussion group and regular social work interviews—was noted and will be discussed briefly here in so far as such participation seemed to relate to their visit patterns.

Group Meetings. Sixteen of the 22 mothers were invited to join a weekly discussion group conducted by a staff doctor.—Six were not invited either because of language difficulties or because their sons had been or were about to be discharged at the time the group was started. Social workers asked each one individually to attend, telling them that "a group of mothers of patients would meet weekly with a doctor to discuss together some of the problems that arise in having a patient here in the hospital. We feel that such a group discussion will provide ideas to help the doctors and the hospital in the care of the patients."

Responses were of three kinds: 1) enthusiastic—such comments as, "wonderful idea," "certainly I'll be there," 2) definite no—"can't," "too busy," "I've read all that," and 3) non-committal—"I'll be there if I can." Mothers in the "over-solicitous" and the "sweet indulgent" categories were the ones who responded enthusiastically to the idea; the "intent controlled" mothers responded with the definite "no" while all but one of the "removed non-participating" mothers and the seductive mother were non-committal. The one exception responded enthusiastically and attended regularly. It appeared that group attendance helped her to fulfill her husband's expectations that she

visit often in a more tolerable way (to her) than spending the time with her son.

Attendance at the group meetings of the "over-solicitous" and the "sweet indulgent" mothers did not, however match the enthusiasm of their reception of the idea. All came at least once but some withdrew after a few sessions. Reasons for withdrawal probably lay in the content of the discussions which is beyond the scope of this paper. The three "intent controlled" mothers never attended a group meeting. Approached several times following the initial invitation they continued to refuse. Only one of the "removed non-participating" mothers came more than twice to the meetings. Their lack of participation when there indicated the possibility that they came only because the social workers had urged them.

Use of Social Service. The social workers introduced themselves and their potential service to nine of the mothers in the following general terms: that she, the social worker, would be available on a regular weekly interview basis to talk over problems that might arise in connection with the patient's illness or hospitalization; that she could be contacted between regular interviews if needed, and that she would like to get as complete a picture as possible of the patient's personality and interests to assist in total hospital planning for the patient's welfare. Recent admission of the patient and lack of previous social work contact were the only criteria for the selection of the nine. Visit patterns had not been established at the time of referral. It was intimated that routine hospital procedure included referral to a social worker, who throughout the patient's stay, would be available for consultation on any problems related to the patient or his family.

In this way the kind of use made of the social worker was dictated in large part by the mother—whether she chose to request services such as messages delivered to patient, simply make inquiries or whether she chose to use the opportunity offered to discuss her own problems in relationship to her son or in other areas of her life situation.

Again, as for the group meetings, it was the "over-solicitous" and the "sweet indulgent" mothers who welcomed the opportunity offered; the "removed non-participating" who subscribed in a limited way only, and the "intent controlled" who virtually refused. (The "seductive" mother was not among the nine.)

The one "over-solicitous" mother in the group of nine grasped at the opportunity, kept every appointment and made frequent contacts with the social worker between scheduled interviews. She wished to have all aspects of her son's treatment explained to her in detail and to contribute her own thoughts and ideas in analyzing his problems and in planning for him.

The two "sweet indulgent" mothers had less definite ideas of how they wished to utilize discussions with the social worker, but accepted the opportunity readily. They wished to keep abreast of hospital plans for the patient in their simplest form, without inquiring into the reasons for it. One, who kept her appointments faithfully, seemed to use what statements the social worker made regarding hospital planning for the patient (e.g. doctor's recommendation for further shock treatment) to bolster her defense against patient demands, "the doctor and social worker say," instead of "I think that."

Responses of the four "removed non-participating" mothers were varied but none of the four entered into the relationship with the social worker with whole-hearted expectancy of giving or extracting anything of use in furthering her son's progress or her own ability to deal with him. Their limited participation in the social work interview situations was of the following kinds: one mother accepted the opportunity to the extent of calling on her assigned social worker when she wanted something of a practical nature, e.g. "why weren't his funds from the VA coming through?" but failed to appear for scheduled appointments without explanation if there were no matters of practical moment (to her).

Two mothers had no interest in social work contact, came by request for a few interviews, seemed bewildered rather than antagonistic to the implication that they had anything to offer or to gain. In their eyes, it was the hospital's problem now, one said "I'm through, I've done all I can," the other, "the hospital will be good to him, why do you need me?" The

fourth "removed non-participating" mother kept her appointments with the social worker, occasionally coming for the interview only, and not visiting her son. She expressed little concern with the treatment her son was receiving, did not expect or ask the social worker to have the latest reports on his progress. She made no requests to "ask Doctor this or that" (nor did she seek him out) but adopted a "what is, must be" attitude toward his illness. Attractive and personable, active and able in her own business affairs, which she enjoyed discussing, the social worker surmised that perhaps she came for sociability.

These four mothers seemed to succeed in remaining emotionally aloof from their sons, from other mothers with similar problems and from the social workers. Their participation in the hospital experience was confined to acknowledgement of their sons' hospitalization by their physical presence, on occasion, within the hospital walls.

Of the two "intent controlled" mothers offered social work interviews, one came for one interview only, never reappeared although she was reminded of the hour saved for her. The other responded to all questions or expressions of interest on the part of the social worker with counter questions in a very paranoid fashion, "Why do you ask?" "What do you want to know for?" She seemed to read a special meaning into the very suggestion of interviews with a social worker. The attempt netted little information regarding mother's attitudes toward her son and succeeded only in frightening the mother (and the social worker) and was abandoned.

Mothers in this group, then, varied in the way they responded to opportunities offered to discuss their sons and their illnesses with members of the hospital staff. Observed visit patterns seemed to be predictive of interest in participating in group discussion or social work interviews, the "over solicitous" and "sweet indulgent" visitors evincing interest and willingness to participate while the "removed nonparticipating" and the "intent controlled" types of visitors either refused or entered with reservations, in response to persistent efforts on the part of social workers to draw them in.

Visit Patterns and Interviews with Social Workers

How did the apparent attitudes of these mothers, as suggested in the visit patterns outlines, compare with their attitudes as evaluated by social workers in interviews with them? What additional understanding can be found in mothers' verbal expositions of their relationships to their sons and in their expressed attitudes toward the hospitalization and treatment?

The "Over-Solicitous, Hovering, Domineering" Mothers. Material obtained by the social worker in her weekly interviews with the mother labelled by observation "over-solicitous, hovering, domineering," confirmed this evaluation of her; in fact, observations of her visits were like visual representations of interview material.

Mrs. A., an almost daily visitor, brought food, magazines, sometimes playing cards, laid her offerings out on a table and drew two chairs up to it. She watched Clarkie, as she called her college student son, while he ate or looked at a magazine, often doing so surreptitiously while appearing to join him also eating a cookie or drinking a glass of milk. She inquired of personnel about the suitability of the type of food she brought; if they went out together she inquired whether he would be warm enough without a coat. She expressed her anxiety about the behavior of other patients, whether the man in the next bed was likely to harm him; about the temperature on the ward, wondering if it couldn't be regulated better, etc. She was seductive as well as solicitous. One observation found the two sitting quietly with arms around each other. On other occasions they strolled arm in arm through the ward or yard—as one nurse said, "like sweethearts." A rather severely dressed, angular woman, in her early appearances in the hospital, she seemed to become more interested in her appearance and more feminine as time went on. Twice she came to hospital dances and danced with her son. She was seen coming to evening visiting hours with hair freshly done and skipping down the street.

In describing her relationship to her son to the social worker she said "he is all I have." She told of how close he had been to her

since his father's death, and of the interests they shared and of how often he had come home from college. She told of how hard he had tried to take father's place, and often likened her relationship to and attitudes toward her husband to those she had to her son (4).

As in the visit situation, so with the social worker she concerned herself with every aspect of her son's hospitalization and treatment, with one notable exception—she never mentioned psychotherapy or the woman doctor assigned to her son as playing a part in his progress. She not only wanted to know the details of his treatment, his diet, his recreation, and his visitors, but had suggestions in every area, often presented from a list she carried with her. She thought that he needed more encouragement to take part in social activities, that attention should be paid to more suitable companionship, etc. In planning for a discharge she talked in terms of "we." "We" might take a trip or "we" might find an apartment. The social worker in interview after interview attempted to indicate to her Clarkie's need to make decisions for himself, while supporting mother in her numerous anxieties about him and herself.

The "Sweet Indulgent Mothers." Interview material about the two "sweet indulgent" mothers indicated that their indulgence was not as freely given as visit observation seemed to indicate.

Mrs. C. seemed so anxious to please her 30-year-old son Bill when she visited—she greeted him enthusiastically and warmly, as he did her—he usually placing a resounding kiss on her mouth when she came. She brought snapshots of the family, anecdotes of home doings which she related with sparkle and verve. Sometimes he showed off for her like a little boy, balancing himself between two beds and saying "look Ma" to which she responded with laughter and apparent pleasure. At other times he failed to respond pleasantly, and launched into accusations of her for putting him in the hospital and reiterated his stand against further shock treatment. Mother's response to this appeared to be a quiet pleading. By and large she seemed and was known as a "nice visitor," cooperative and no trouble and one who gave the patient pleasure.

Interview material indicated that there was a price for the sort of sweet indulgence that mother could provide and that the patient seemed to prize, that had been characteristic of their relationship. Conditional and unspontaneous giving of gifts or affection to her son was clearly portrayed in the mother's description of her relationship to her son; it was particularly apparent in the frequent comparisons she made of Bill and his sister Louise.

Bill, mother said, had always been a good boy, two aspects of his "goodness" being especially prominent in her description: he never exaggerated and he always did errands for her willingly and helped her around the house. Tietze 7 mentions how highly mothers she interviewed prized "goodness." Louise, on the other hand, told stories and wouldn't run errands. Bill never demanded attention the way Louis did. Louise would crawl up in her lap, put her arms around her neck and wheedle money for ice-cream out of her. She explained how hard she had tried to treat them alike, and how she had managed to give Bill a watch recently because Louise had been given one for graduation—five years ago. Louise was gay and sociable while Bill preferred to work on model airplanes.

What mother gave to Louise, she gave spontaneously, with and in response to expressed affection; what she gave to Bill, she gave as an afterthought, deliberately, to make things fair, and in return for his goodness, which to her was largely represented by his willingness to run errands for her. Even in his illness at age 30, the theme of running errands assumed an importance. She told of one visit in which he became angry and resentful, accusing her of not trying to get him out of the hospital. She told him that she wouldn't visit if he talked like that. Toward the end of the visit he reminded her of how he used to run errands for her and said, "if you'll visit I'll even shave for you, Ma."

The "Intent Controlled" Mothers. Two of the "intent controlled" mothers, as previously noted, did not provide the social workers with much opportunity to determine the nature of their attitudes and relationships. One, the social worker saw only once. The other was so suspicious of the social worker's interest that it was not possible to establish any relationship with her. She spoke of what a "pet"

she had made of her son, but did not elaborate. Mother's contributions were confined to criticism of the doctors for giving or for not giving insulin (it was difficult to determine which she was criticizing). What comments she made were directed over her shoulder as she was leaving the office. It was the social worker's conclusion that she was as paranoid as her son.

The "Removed Non-Participating" Mothers. In interviews the four "removed non-participating" mothers expressed little concern with the patient's or their own feelings about his hospital treatment. Although manifested differently by each, the emotional distance between patient and mother noted in the visit situation was also evident in their expressed attitudes and feelings about the patient and his illness. A marked contrast between the "over-solicitous" and the "sweet indulgent" on the one hand and the "removed non-participating" on the other in their emotional involvement with his hospital experiences was noted. Yet these mothers, in describing their past relationships with their sons, mentioned in various ways how "close" they had been or how much protective care they had given to their sons.

The first mother to be discussed, Mrs. S., visited her son, Johnnie, quite frequently, always appearing neatly and fashionably dressed, the number of new hats she wore being a subject of frequent comment. In the visit situation, she made no attempt to please, divert or entertain her son and ignored his attempts to draw her attention. Once she watched television over his shoulder while he made several unsuccessful attempts to interest her in his account of some hospital activity. Another time she was annoyed that he had gone to another part of the hospital and refused to join him there although he had left word for her to do so. "Why can't he stay in one place when he knows I'm coming?" was her angry comment to the nurse. On still another occasion, she refused a cigarette the patient offered her in favor of a different brand she was carrying, refused a cookie he had saved for her because "it was probably stale."

Her concerns about Johnnie's hospitalization, expressed to the social worker, were confined to appearance and financial responsibility. She complained that Johnnie was getting fat, that his clothes didn't fit. She pressed for transfer from acute to convalescent ward "because it's cleaner and more orderly" on the convalescent ward. When told that he could not go home for Easter, her one response was "what does he want a new Easter suit for then?"

She made no inquiries regarding the kind of treatment he would receive. Just before he started on insulin, Johnnie told her how frightened he was but she asked the social worker no questions regarding the effect, nature or possible discomfort of the treatment, even when the element of risk was pointed out to her. However, when she was concerned about his appearance or about possible financial difficulties, she became quite aggressive and militant with hospital administration as well as with the social worker.

In describing Johnnie's childhood, mother said she always kept him close to her—"he was company for me" was the way she put it. As a baby she used to bring him into the living room, for company. Later when she worked in a factory she took him with her there. The "closeness" she described seemed to be one in which Johnnie followed her around and tried to keep close to her rather than one in which the initiated "closeness." From her description and her visiting techniques, Johnnie reminded one of a puppy hanging around for scraps; sometimes receiving a few, occasionally a kick instead, but always returning with hope. The social worker, with patience, caution and continued expressed interest in all mother's problems, financial and otherwise, succeeded in establishing some relationship with her, and as this study ended was endeavoring to show mother, by visiting with her, what kinds of responses Johnnie sought from her.

A second "removed, non-participating" mother ignored her son in the visit situation in a less aggressive fashion. Sometimes she answered her son's confused comments and bids for attention mechanically, but gently, while looking off into space. "Do just as the nurse says, Georgie." At other times she came in with another visitor and, while the patient sat between them, they carried on a conversation about outside doings over his bent head. Ward personnel did not know she was his mother; they spoke of her as his sister.

To the social worker, she gave a picture of

a close-knit, lively, fun-loving family life. Paradoxically she gave this information in a bland unemotional way that was characteristic of all her communications. The patient, the oldest child in the family, had been the sickly one among a group of rather robust siblings. Mother said "he was the oldest but I always think of him as younger than the rest." The family made a pet out of him, the other children as well as mother and grandmother doing special things for him. He seemed to have several substitute mothers (he called his grandmother "Ma")—did mother view the social worker as another substitute mother?

Lack of directiveness toward her son and toward the hospital was a consistent attitude she maintained throughout her contacts there. Although disapproving of the constant visits of her son's girl friend to the hospital, she never attempted to stop them nor asked that the hospital do so. She wondered why he wasn't being given shock treatment, when it had been successful on his last admission, but did not request that the reasons be explained to her or that it be tried again, in fact she never got in touch with her son's doctor directly. When the social worker offered to get a full report of his progress and activities from the doctor and other members of the staff, she said "you don't have to bother if it takes up too much of your time."

This mother had had many tragedies in her life, and she seemed to have built up a fatalistic resignation to her lot and to be fearful of holding a grudge or of fighting back. Such defenses seemed to enable her to function well as a person, in her family, and in the job she held, and the social worker felt that encouraging her to express her deeper feelings would not serve any useful purpose and might prove dangerous for this woman's continued adjustment. One could not help feeling, however, that this weak, ineffectual, confused and child-like patient might have benefited if he could have borrowed some fight, push and direction from his family. Had the patient remained in the hospital (he was transferred) it was the social worker's intention to attempt to encourage his mother to provide some direction.

Another "removed non-participating" mother expressed her distance and lack of involvement with the patient and his illness in even more concrete ways. She came to see the social worker only after a final request, amounting almost to a demand. She said she didn't think she would visit, "it was too far" (one-half hour's subway ride) and "anyway, they'll be good to him here." She asked no questions about what the hospital could or would do for him nor how he seemed on the day of the interview. Yet in describing his childhood, she said she always had to keep an eye on him. She accompanied him to and from school until he was 12 years old because "he might get lost." She noticed "the guy (the term she used in referring to him) got lost a lot."

Discussion and Summary

These observations and impressions of the 22 mothers of young male single schizophrenic patients suggest that the direct observation of the relatives who visit patients in a mental hospital may be a useful tool for adding to the understanding of interpersonal relationships. It may also assist in pointing up ways in which the relatives of a patient may respond to or utilize various opportunities to participate in the hospital experience beyond the actual visit with the patient.

By observing mother and son visiting together, it was possible to divide the visiting patterns of the group of 22 into roughly 5 groups: 1) "the over-solicitous, hovering, domineering" mothers (3), 2) "the sweet indulgent" mothers (8), 3) the "seductive" mother (1), 4) the "intent controlled, quietly purposeful" mothers (3), and 5) the "removed, non-participating" mothers (7). Material from the social workers' interviews with the mothers and the comments made by the nurses on the wards corroborated the impressions gained from direct observation.

The common conception of a mother of a schizophrenic as "over-solicitous, over-anxious and domineering" was not borne out in this group. Only 3 of the 22 could be so classified, while the visiting techniques of almost half the group were so lacking in concern and solicitude that their very presence or existence went virtually unnoticed by those caring for the patients. They study suggests that the common conception of the "typical" mother of a schizophrenic may be derived from the flagrant,

conspicuous behavior of the few rather than from a composite picture of all such mothers.

The study also suggests that by observing the visiting habits of relatives one may be able to predict their willingness or interest in participating further in the hospital experience by joining discussion groups or by maintaining regular contact with social workers. Observation in this study seemed to be particularly useful in ferreting out those mothers whose attitudes toward the patient seemed unconstructive but who, in the ordinary course of events would not seek out or respond to group or social work opportunities designed to help them gain in understanding. Techniques for drawing these relatives into some alliance with the hospital need to be developed if the mental hospital plans to reach out through its visitors and relatives to increase the understanding of the problems of the mentally ill among the families of patients. Visitors who through participation in the hospital experience come to share the goals of the hospital may prove to be the best educators of the community.

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EVALUATION OF THE POSTCONCUSSION SYNDROME WITH THE RORSCHACH TEST [1]

RALPH M. REITAN [2]

Courville's (4) excellent study of the historical, biological, and medical aspects of concussion and the postconcussion syndrome has served to substantiate this condition as a diagnostic clinical entity. His findings indicate that the postconcussion state includes a wide variety of symptoms which may be classified under the major headings of headaches, "nervousness," dizziness, disturbances of vision, fatigability, and auditory symptoms. Although the clinical diagnosis is dependent largely upon the nature of the patients' complaints, Courville believes the anamnestic and clinical material contains sufficient consistency among individuals who have suffered closed head injuries and unconsciousness to permit valid diagnosis.

Relatively few reports of psychological test results on patients with the postconcussion syndrome have appeared in the literature, but among those which have appeared are ones which imply that Rorschach test results permit rather clear-cut differentiation of these patients from ones having only neurotic difficulties. Brussel, Grassi, and Melniker (3), using the Rorschach test, reported that they were able to duplicate the diagnostic impressions of postconcussion syndrome obtained from psychiatric interviews in five patients. The total group contained 16 patients, 11 of whom had other diagnoses. They depended heavily upon Piotrowski's (9) "signs" of brain damage as well as a graphic Rorschach technique. Koff (7) reported that in 67 of 75 patients with cerebral concussion who had spinal fluid protein over 40 mg. per cent, the Rorschach " . . . indicated the presence of intracranial organic pathology." None of 52 patients with spinal fluid protein under 30 mg. per cent gave such indications. Koff used no control group of patients who had not suffered concussion.

Lynn, Levine, and Hewson (8) gave attention to the considerable difficulties they found in attempting to characterize Rorschach records of patients with postconcussion as contrasted with neurotics, normals, and patients with structural brain damage. A fairly common finding in their postconcussion group was reduced productivity and emphasis upon usual or stereotyped rather than original responses.

PROBLEM

The problem in the present study was to compare Rorschach results from a group of patients having the post concussion syndrome with a group having neurotic disturbances and one with structural organic brain damage.

SUBJECTS

Three groups of 23 subjects were used. In the experimental group, each patient had a history of concussion and the diagnosis of postconcussion syndrome was made by the examining neurologist. Two control groups were composed also of patients who had been examined neurologically. One of these consisted of patients who had structural damage to the brain and the other of patients who had neurotic complaints but had no history or evidence of brain damage. The groups with brain damage and postconcussion syndrome were tested from 3 to 6 months after injury in nearly all cases. The purpose of the tests was not explained and the tests were administered as routine procedure.

PROCEDURE

The Rorschach test was administered individually to each patient. All tests were finally scored using Beck's (2) method immediately after testing and before any of the groups were composed. In an attempt to limit irrelevant intergroup variance, the patients in the groups were individually matched on the basis of color

[1] Supported in part by a grant from the James Whitcomb Riley Memorial Association.

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TABLE 1.—Distribution Constants for Three Equated Groups

	Age	*Education*	*I.Q.*
Neurotics			
Mean	26.09	11.04	106.60
S.D.	4.85	2.24	17.72
Concussion			
Mean	25.30	11.43	106.72
S.D.	4.08	2.61	24.24
O. B. D.			
Mean	25.17	11.43	106.48
S.D.	3.05	2.22	20.03

and sex, and as closely as possible with respect to age, years of formal education, and I.Q. (Wechsler Mental Ability Scale). The comparability of the groups on these variables is shown in table 1. None of the mean differences approached statistical significance.

Statistical comparisons of intergroup differences were made.

Results

Table 2 presents the means and standard deviations obtained by the three groups on various Rorschach variables.

The means for the group with brain damage rather consistently fell below those for the other two groups, but the differences in comparing the group with neurosis and that with the postconcussion syndrome were not consistent in direction. Intergroup comparisons are more easily made in a graphic representation of the means. Figure 1 presents the means for each variable on a T-score scale. The standard score scale for the Rorschach variable was constructed by combining the three groups. The mean values for each group were plotted in accordance with the corresponding T-scores based upon the three groups.

Figure 1 presents comparisons of each combination of group pairs as well as a summary subfigure. In *A* it is apparent that the neurotic patients generally exceeded those with brain damage. An indication of the magnitude of differences is present in the figure since 10 points on a T-score scale represents 1 standard deviation. *B* indicates that the postconcussion group also exceeded the group with brain damage regularly, whereas the comparison of the neurosis and postconcussion groups in *C* shows inconsistent differences. These results suggests that in our samples structural brain damage lowered the quantitative Rorschach scores, but that the patients with neurosis and postconcussion symptoms failed to show any substantial differences.

Statistical comparisons of the intergroup mean differences generally failed to reach significance. The brain-damaged group had significantly fewer minor detail (*Dd*), white-space (*S*), and *popular* (*P*) responses than did the neurotics at a level beyond .05. The postconcussion group, however, failed to differ significantly from the other groups on any variable.

The Rorschach records in the three groups were also studied with reference to the frequency of occurrence of various "signs" of brain damage. The signs proposed by Piotrowski (9) and those by Aita, Reitan, and Ruth (1) were used. The relevance of certain of these signs to organic impairment of psychological functions has been indicated (10) by their significant correlations with Halstead's (5) measures of biological intelligence.

Figure 2 presents a graphic comparison of the relative frequency with which Piotrowski's signs occurred in each group. Each sign is indicated on the horizontal axis, and along the

TABLE 2.—Distribution Constants for Three Diagnostic Groups on Rorschach Test Variables

	R	*W*	*D*	*Dd*	*M*	*SumC*	*Z*	*F+*	*F—Total*	*FCF*	*FC Total*	*CYF*	*FY Total*	*YFV*	*S*	*P*	*T/R*	$\frac{Z}{T/R}$
Neurotics																		
Mean	35.83	6.17	23.35	6.30	1.74	3.52	26.63	15.65	6.70	24.22	1.61	1.87	4.13	.09	3.22	3.30	1.78	4.39	6.87	54.57	.8
S.D.	21.59	5.19	14.36	8.86	2.23	3.55	22.06	9.93	7.77	1.81	2.53	1.51	3.64	.28	3.12	3.11	2.70	4.36	2.40	26.20	.9
Concussion																		
Mean	30.13	7.78	19.52	2.83	2.91	4.52	31.30	11.30	4.65	17.04	1.87	1.96	4.74	.70	3.43	4.35	.78	3.00	5.70	53.30	.7
S.D.	19.10	8.34	11.82	3.66	2.41	5.10	30.30	6.36	3.12	9.85	2.83	2.03	5.06	1.71	3.63	4.95	1.44	3.08	2.76	18.09	.9
O. B. D.																		
Mean	24.70	6.43	16.09	2.22	2.17	3.43	25.17	10.43	4.13	14.87	.83	1.74	3.70	.26	2.39	2.74	.91	2.09	5.30	63.57	.9
S.D.	17.67	6.13	12.72	3.11	2.26	4.04	18.37	7.57	4.37	11.53	1.17	1.59	3.54	.85	2.67	3.17	1.32	3.15	2.49	32.06	.8

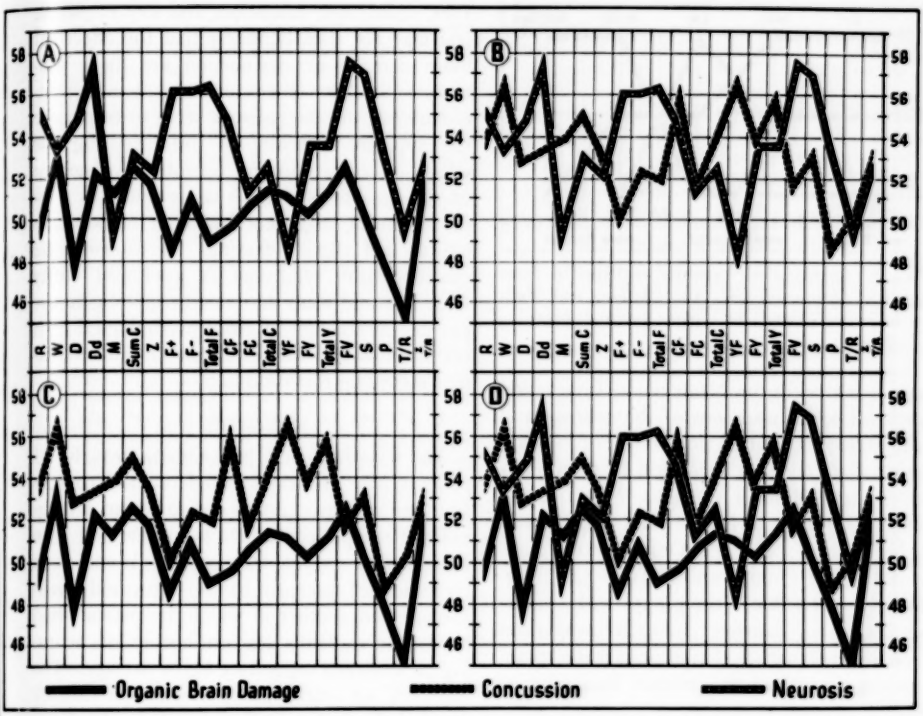

FIG. 1. Graphic presentation *of mean Rorschach* test scores converted to T-scores for each of three diagnostic groups.

vertical axis "most," "middle," and "least" indicate the comparative frequency of the signs in the three groups. When the same number of persons in two groups gave a particular sign, both groups were indicated at an average of the two positions not occupied by the third group.

It is apparent from figure 2 that the three groups overlapped very distinctly and showed

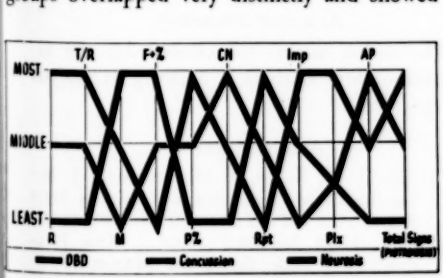

FIG. 2. Comparative frequency rankings of three diagnostic groups on Piotrowski's Rorschach test "signs" of organic brain damage.

no consistent pattern. Statistical analysis of the intergroup frequency differences using the chi-square test indicated no significant differences between the neurosis and concussion groups. *R* (number of responses less than 15) and the total number of signs differentiated the neurotic and brain-damaged groups beyond the .01 level, and *Impotence* (recognition of the inadequacy of a response with inability to improve or withdraw it) beyond the .05 level. In comparing the postconcussion and brain-damage groups only Impotence and the total number of signs showed significant differences, both beyond the .01 level.

Results with Aita, Reitan, and Ruth signs are depicted in figure 3.

The results with these signs were considerably more consistent. The brain-damaged group rather regularly had the greatest and the neurotics the fewest number of signs. Again, however, relatively few of the differences were statistically significant. No significant differ-

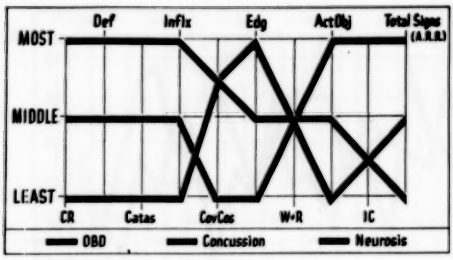

FIG. 3. Comparative frequency rankings of three diagnostic groups on the Aita, Reitan, and Ruth Rorschach test "signs" of organic brain damage.

ences appeared in the Neurosis vs. Concussion comparisons. Comparisons of the neurosis and brain-damaged groups yielded the following results: *Def.* (unclear definition of responses) and the total number of signs, $P<.001$; *CR* (concrete responses), $P<.01$; and Catas (catastrophic reaction), $P<.05$. Only the total number of signs ($P<.001$) and Def ($P<.01$) significantly differentiated the groups with concussion and brain damage. In each comparison which reached statistical significance the brain-damaged group had the greatest frequency of signs.

DISCUSSION

Although the Rorschach test has been shown in a number of independent studies (1, 6, 9, 14) to be of value in assessing the psychological effects of brain damage, the present comparisons between neurotic and postconcussion groups reveal insignificant differences. The results would suggest that our sample of patients with the postconcussion syndrome failed to show as much effect of cerebral dysfunction as was found in other studies using groups of patients having myxedema (11), chronic brucellosis (12), essential hypertension (13), or multiple sclerosis (15). Although direct comparison between investigations using separate groups may be invalid in many respects, the patients in the above studies were administered the Rorschach test by the same examiner and were compared with similar neurotic and brain-damaged groups. In each of these studies the members of the control groups were individually matched with those of the experimental group on the same criteria (sex, color, age, education, and I.Q.). While one may not state definitely that the effects of brain damage or dysfunction are more pronounced in these other conditions than in postconcussion, the comparisons serve to emphasize the apparent difficulty in differentiating the effects of concussion and neurotic involvement on the basis of Rorschach test results. In view of the strong argument based on neuropathological and clinical findings for viewing the postconcussion syndrome as a clinical entity (4), it would seem desirable to investigate the possible advantages of other psychological tests for potential use in research and clinical evaluation regarding this condition.

SUMMARY

The Rorschach test was administered to 23 patients who had experienced cerebral concussion and unconsciousness and in whom a diagnosis of the postconcussion syndrome had been made. This group was compared with one composed of patients having structural brain damage and another in which the patients had neurotic complaints but no history or neurological evidence suggesting brain damage. The members of each group were individually matched for color and sex, and as closely as possible for age, years of formal education and I.Q. The results indicated certain differences between neurotic and brain-damaged groups similar to those reported in previous studies. Differences between the group with neurosis and that with the postconcussion syndrome were negligible. These results suggest that the Rorschach test may not yield as reliable a basis for differentiating the symptoms of neurosis and concussion as has been implied in certain earlier reports.

ACKNOWLEDGMENT

The author wishes to acknowledge the assistance of Mrs. Barbara L. Melberg in analysis of the data.

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INCIDENCE OF FRACTURES IN ELECTROTHERAPY [1]

MAURICE KLOTZ, M.D.[2]

[2] Chief, Acute Intensive Treatment Service.

This investigation was undertaken to further evaluate more accurately the number of fractures, symptomatic and asymptomatic, due to somatic therapy. This study also has a practical aspect from a medicolegal standpoint since the price of malpractice insurance is materially increased when electrotherapy is used as a method of treatment. Review of the literature notes the incidence in those (2, 6, 9) *without* post-treatment x-rays of the spine was zero (in 350 cases), 23 (in 230 cases) and 5 (in 156 cases) per cent. In the series (1, 3, 4, 7, 10) *with* post-treatment x-rays of the spine, the findings were 14.7 (in 143 cases), 20.8 (in 283 cases), 19.3 (in 258 cases), 35.4 (in 212 cases) and 0 (in 60 cases) per cent. Those fractures which were without noted subjective symptoms constituted 30, 30 and 94 per cent of the over-all incidence (3, 4, 1). The use of Syncurine (3) and curare (7) reduced the percentage of fractures from 20.8 and 35.4 to 1.9 and 19.5, respectively. The series (1, 4) which did not use muscle relaxants reported occurrences of fractures as 14.7 and 19.3 per cent. Fractures occurred about three times as often in males as in females (3, 6), presumed to be due to the stronger muscular contractions in the male. The most common site of vertebral fractures was mid-thoracic (1, 4, 7, 9) and they were of little morbid significance, tending to heal spontaneously (5, 8).

METHOD

A survey was made of all patients receiving electrotherapy (ECT) at this hospital in regard to the incidence of fracture due to treatment. This included 1,258 male patients who received a total of 1,991 courses and 31,133 grand mals from November 1943 to May 1954, after which Anectine was used as a muscle relaxant. A further study will be made in reference to the relationship of this drug as prophylaxis against fractures. Curare was given until July 1945 only to those who were extremely tense and well muscled. It was then given intravenously in doses of 3, 2½ and 2 cc. according to heavy, moderate and slight physique, until November 1947. Then an automatic glissando type of instrument was substituted and the use of curare was discontinued. During 1951 a marked increase in the fracture rate was apparent although the same technique and team were used for over 2 years. The causes for this still remain obscure. In October 1951 curare was reinstituted and the bolster (about 6 inches in diameter) was replaced by a flat sandbag for hyperextension of the spine. Prior to this time x-rays of the spine were taken routinely before ECT and then only if there were significant subjective symptoms and/or objective findings. A policy of routine post-ECT x-rays of the spine was then established.

FINDINGS

A total of 77 fractures was found in 72 patients (5 had fractures more than 1 time). Of these, 72 were vertebral (66 dorsal, 6 lumbar), 3 were rib, 1 was a shoulder and 1 a hip. The mean age of the patients was 37.4

TABLE 1.—TYPES OF FRACTURES

		Components		
Locations	*No.*	*Total No.*	*No. per fracture*	*No. of patients*
Vertebra				
Dorsal ...	66	119	1.8	63
Lumbar ..	6	6	1.0	4
Other Locations				
Ribs	3	6	2.0	3
Shoulder .	1	1	1.0	1
Hip	1	1	1.0	1
Total	77*	133	1.7	72

* Includes five fractures at different times in same patients.

[1] From the Veterans Administration Hospital at Downey, Ill.

[2] Chief, Acute Intensive Treatment Service.

TABLE 2.—TYPES AND NUMBERS OF VERTEBRAL FRACTURES

Vertebra	2	3	4	5	6	7	8	1	2	3	4
Number of Fractures .	2	26	39	29	19	3	1	1	1	3	1

years and the fractures occurred at an over-all mean of 11.5 grand mals. Since 42 per cent (32 cases) of the vertebral fractures were symptomless and only found incidentally on routine x-ray, a more realistic mean would have been 4.7 grand mals if fractures without symptoms were omitted from the calculations. Most of the vertebral fractures were located in the mid-thoracic region from the second to the eighth dorsal vertebrae, mainly involving the third to the sixth. The component fracture average was 1.7 per patient. The average number of fractures was 3.1 per year from November 1943 to December 1950. From January to October 1951 this increased to 16, constituting a yearly average of 21.3 fractures, or about 7 times the previous average. Subsequently there were 14 fractures with symptoms and 29 fractures without symptoms. There were 3 additional symptomless fractures which were found prior to this time and these were discovered incidentally on routine pre- ECT x-rays of the spine and due to previous ECT. The average number of fractures per year during the time routine post-ECT x-rays of the spine were taken was 16. This is in contrast to the 3.1 fractures per year average from November 1943 to December 1950. The over-all average number of fractures per year was 6.4. The relationships of the fractures to the various periods is outlined in table 3.

DISCUSSION

This investigation was primarily oriented towards the more accurate determination of the true incidence of fractures due to ECT. Causal factors have been well discussed by other writers. It is interesting to note that Darling (2) reported 350 cases in which there were neither deaths nor fractures. Since routine post-treatment x-rays were not taken it is likely that there were unrecognized symptomless fractures in this series. The present findings revealed that symptomless fractures, which would have been overlooked, constituted 67 per cent of the total of 43 fractures during the period in which routine post-ECT x-rays were taken. Cook and Sands (1) reported that 94 per cent of the fractures (chemical convulsants) had no significant symptoms and the other two studies (3, 4) each had 30 per cent of the fractures without significant symptoms. One singular series (10) with routine post-treatment x-rays of the spine and no muscle relaxant revealed no fractures and this was attributed by the writer to the firm but flexible technique of the team.

SUMMARY

1. Of 1,258 patients treated with ECT, 72 developed a total of 77 fractures incurred at different times, attributed to the treatment from November 1943 to May 1954, including 1,991 courses and 31,133 grand mals.

2. Of the 77 fractures, 72 were vertebral (of

TABLE 3.—RELATION OF FRACTURES TO PERIOD

Period	*Curare*			*Post-ECT X-ray*		*Symptoms*				
	None	*Occasional*	*Routine*	*Yes*	*No*	*Yes*	*No*	*Total*	*No. of Years*	*Ave. per year*
Nov. 1943–June 1945	—	x	—	—	x	7	0	7	1.7	4.1
Jul. 1945–Nov. 1947	—	—	x	—	x	6	1*	7	2.3	3.0
Dec. 1947–Dec. 1950	x	—	—	—	x	8	0	8	3.0	2.7
Jan. 1951–Sept. 1951	x	—	—	—	x	10	2*	12	0.8	16.0
Oct. 1951–May 1954	—	—	x	x	—	14	29	43	2.7	16.0
Total						45	32	77	10.5	6.4

* Discovery of symptomless fractures prior to routine post-ECT x-rays of spine in October 1951, was incidentally found in routine pre-ECT x-rays of spine in subsequent course of ECT.

which 66 were dorsal and 6 lumbar) and most of these occurred in the region of the 3-6 dorsal. Three involved the ribs, and there was one each involving shoulder and hip areas.

3. The average component parts of regions fractured were: vetebral 1.8, lumbar 1.0, ribs 2.0, shoulder 1.0 and hip 1.0.

4. The average number of fractures per year from November 1943 to December 1950 was 3.1 increasing to 21.3, for obscure reasons, during the period of January to September 1951.

5. From October 1951 to May 1954, there were 29 (67 per cent) of a total of 43 fractures without known symptoms, which were discovered incidentally on routine post-ECT x-rays of the spine instituted during this period.

6. These, added to three other symptomless fractures found incidentally before this period on routine pre-treatment x-ray, constituted a total of 32 (42 per cent of over-all incidence of 77 fractures).

7. All fractures were of the simple type. Those involving the vertebrae were of the compression type, usually involving less than one-third of the anterior aspects of the body of the vertebra, with no known residuals.

Conclusions

1. Symptomless fractures do occur in the vertebrae due to ECT which may remain undetected unless routine post-treatment x-rays of the spine are taken.

2. While these may not be of much clinical morbid significance, they are of academic interest and of medicolegal significance.

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A CASE OF SCHIZOPHRENIA IN CHILDHOOD

A. GILLIS, M.B., B.Sc., M.R.C.P.E., D.P.M.

Schizophrenia is an uncommon disease in childhood and, generally speaking, cases of schizophrenia in children do not readily fall into the classification used for the adult forms of this disease. Kanner (1) merely distinguishes cases with acute onset and cases with insidious onset. In a reliably diagnosed case the prognosis is almost uniformly bad. The case reported here is unusual in that the clinical picture very much resembled that of the adult schizophrenic acute reaction and it is also unusual in that it showed a rather favorable course. Eickhoff (2) has suggested that schizophrenia in childhood is an arrest in development of abstract thought and emotional maturity at an infant or toddler level, dependent basically on a defect in the acquisition of general sensation. Schurmans (3) describes seven cases of infantile psychosis which resembled adult schizophrenia more closely than any other condition. However, as the onset of these cases was between 1 and 5 years of age, it is difficult to say whether they represent a regression as in adult schizophrenia or an arrest in development. The case reported here is of interest as the onset was at 12 years in an individual whose previous history did not suggest an arrest in development of abstract thought, although his level of intellectual development was at the lower end of the average range.

Case Record

A boy aged 12 years was admitted to the local Infectious Diseases Hospital on April 9th, 1953, with a history of 5 or 6 days' confusion. His mother stated that she first noticed something wrong when she sent him to bring some coal and he came to her saying that he could not find the coalhouse. There were no vomiting, headache or pyrexia, but in view of the fairly acute onset and a possible tuberculosis contact he was admitted to the Hospital for Infectious Diseases for investigation—especially with reference to tuberculous meningitis.

Physical examination revealed no abnormality in the C.N.S. The lumbar puncture on admission produced transparent C.S.F. containing one cell per cubic m.m., protein 10 mg. per cent. W.R. reaction negative and Lange normal. After his admission his behavior became strange. He was difficult to nurse and was reported to have thrown dishes across his room for no particular reason. At the slightest sound he became very disturbed, and the noise of drawing curtains was sufficient to precipitate a noisy outburst. When I saw him 3 days after his admission I was able at the same time to interview his mother. She gave a history which suggested that the boy had been subject to fairly severe emotional stress. He had had two eye operations for bilateral correction of squint about a year ago. A few months previously he had been moved to a new school and the mother thought that he was unhappy there. She stated that he worried over his homework, spending a long time over it, and on two occasions he had got up during the night to continue with his homework.

On examination he showed a fairly severe thought disorder, his replies to questions were mostly irrelevant and often composed of bizarre phrases, for example, "blood poisoning" repeated over and over again, or, "I am not to blame." He gave the impression of low average intelligence, perhaps bordering on high-grade mental defect, and the picture was that of a schizophrenic reaction in such a person. He was admitted to Cherry Knowle Hospital on my advice for further investigation and treatment. On his arrival there on April 20th, 1953, he was found to be semi-stuporous, lying with his mouth open and taking no interest in his surroundings. This was thought to be a catatonic phase and he was given intravenous sodium amytal (grains 1½); under the influence of this he began to answer questions. He stated that he was being blamed "for letting out the pigeons" and also for "breaking the lamps." He later relapsed into his semi-stuporous state. Although the diagnosis was now almost certain, a few further investigations were carried out to exclude an organic lesion. X-ray of the skull showed no abnormality and the fasting

blood sugar was 73 mg. per cent. The E.E.G. was an abnormal record showing generalized low voltage delta activity.

Two weeks after admission he was still completely mute except for occasionally muttering "I did not do it." It was possible to obtain coherent conversation from him by giving him intravenous sodium amytal. On a few occasions he was reported to have been seen weeping. The lumbar puncture was repeated and the previous findings confirmed. An air encephalogram was done and the pictures showed that air had entered the ventricular system, but no abnormality could be detected. The catatonic state persisted and he was given E.C.T. on two occasions. Following this he spoke a little more freely, but most of it was incoherent. At this time he became resistive to nursing assistance and was refusing his food. He appeared also to be suffering from aural hallucinations and at times was incontinent. On June 29th, 1953, he was found to be quite disorientated, not being able to find his own bed, often mistaking staff members for close relatives and frequently crying "I didn't do it." As he was not making much progress it was decided to allow him home for a few days to try the effect of home environment. He was at home from July 8th until 13th, and on his return was found to be very much as before. He now seemed to be becoming increasingly despondent and uncommunicative, especially during the early part of the day; at other times he gave the impression of being apprehensive and fearful. His conversation remained incoherent to a large extent, and he was frequently incontinent of urine. It was decided to commence insulin therapy. By August 6th, 1953, that is 3 weeks later, although no comas had yet occurred, he showed marked improvement. His conversation had become relevant and coherent and his mood more normal. His parents were pleased with him and thought he was now approaching his "normal." He was given weekend leave in the middle of September and on his return his father stated that he wished to have him at home. Although the insulin course was just getting under way, it was decided to allow him home, at least for a time.

Further Course

Reports were obtained at intervals and he was seen at outpatient clinic from time to time. On December 7th, 1953, his mother reported that "he is wonderful," doing well at school, happy and contented. On simple tests his intelligence seemed to be average for his age and no active schizophrenic symptoms were present. This satisfactory state has continued for the past year. He was last seen in November 1954 and I had an E.E.G. made. This showed a definite excess of slow activity but considered to be a non-specific abnormality and of no great significance. The boy seemed to be doing fairly well, and no special complaints were made by his mother.

Comment

This case is an example of schizophrenia in childhood with a clinical picture very similar to that of an adult acute catatonic reaction. The physical findings were all negative. The improvement with E.C.T. and insulin are what might have been expected in an adult case, but must be considered remarkably favorable in childhood, in view of the usual gloomy prognosis given in these cases. It is now more than 20 months since the onset of his illness and more than 15 months since his return to school. It is to be hoped that the present state is more than a temporary remission.

I wish to thank Dr. E. F. Dawson-Walker for referring this case to me and Miss A. Wilson for her secretarial assistance.

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SUPERFICIAL PSYCHOTHERAPY IN PSYCHONEUROSIS [1]

A Study of 317 Cases Treated with the Aid of Sodium Pentothal, Methedrine and Carbon Dioxide [2]

N. S. VAHIA, M.D., AND M. R. GAITONDE, D.P.M.

INTRODUCTION

Realizing that the number of patients in need of psychotherapy was much greater than our ability to cope with them at the K. E. M. Hospital, Bombay, it was considered advisable that some measures should be taken, if possible, to decrease the number of sittings required by each patient. After some preliminary work it was felt that it would be advisable to study the value of a few drugs in shortening the duration of treatment in cases of psychoneurosis. In the beginning we used Pentothal mainly and as the work progressed Methdrine and carbon dioxide were included in the study. After obtaining our first impressions we sent them to some of our colleagues abroad for their comments. The names of some of these workers were supplied to us by the Chairman of the Research Committee of the American Psychiatric Association.

METHOD

Cases which, in our opinion, required psychotherapy were included in this study. One of us (M. R. G.) made a detailed psychiatric case study by the interview technique. Complete physical examination and necessary laboratory investigations were carried out in every case. An explanation regarding the nature of treatment was given to the patient before its commencement.

Only a brief description of the technique adopted by us is given because complete details regarding the administration of sodium Pentothal, Methdrine and carbon dioxide with their indications and contraindications have been discussed by us in separate publications.

Pentothal. Pentothal 2.5 per cent (i.e. 0.5 gm. in 20 cc. distilled water) was injected intravenously at the rate of 1 cc. per minute till the patient reached the twilight state. With the background already obtained, questions were asked to the patient relating to his illness. Sometimes the patient, who was quite conscious in the first minute or two, suddenly slept without passing through the twilight state. These patients were interviewed as they came out. A minimum of six sittings were given. The number of sittings were increased when it was felt that more sittings would make the psychodynamics clear or would help in the patients' improvement. The maximum number of sittings given to one patient was 32.

Methedrine. Methedrine 20 mg. diluted in 4 cc. distilled water was injected intravenously very slowly daily in most of the cases as recommended by Levine and others (4) Arbitrarily six treatments were given to every patient before deciding the advisability of continuing further. The maximum number of sittings given to one patient was 18. When Methedrine was used for differential diagnosis between psychoneurosis and psychosis or between organic and functional psychosis, the injections were stopped as soon as the diagnosis was clear. The interviews were conducted in the morning to avoid sleeplessness that followed when injections were given in the afternoon.

Carbon dioxide. Carbon dioxide inhalation therapy was used according to the technique of Meduna (1). Usually 30 daily sittings were given before the patient was considered refractory to treatment. In patients that started showing improvement more sittings were given. The highest number of sittings given to one patient was 125.

RESULTS

Once a week or more often when we felt necessary, the patient's interviews and his progress were discussed and after six treat-

[1] The investigation was carried out with the help of a grant from the Indian Council of Medical Research, Government of India.

[2] From the Department of Psychiatry, K. E. M. Hospital, Parel, Bombay, India.

TABLE 1.—ANALYSIS OF THE RESULTS OF TREATMENT

Duration of illness: less than 6 months

Disease	No. of Cases	Therapeutic Response R	GI	SI	NI	TD
Hysteria	40	16	5	5	5	9
Anxiety state	18	5	4	1	3	5
Sex disorder	8	2	2	—	—	4
Psychosomatic illness	7	—	—	1	3	3
Hypochondriasis	2	—	—	1	1	—
Obsessive compulsive neurosis	3	3	—	—	—	—
Depression	4	1	—	1	2	—
Stammering	4	—	1	1	1	1
Miscellaneous	19	2	1	1	1	14
Total	105	29	13	11	16	36
Duration of illness: 6 months to 1 Year						
Hysteria	16	7	2	3	2	2
Anxiety state	10	1	4	1	1	3
Sex disorder	10	2	2	2	1	3
Psychosomatic illness	2	—	—	—	1	1
Depression	1	1	—	—	—	—
Stammering	2	—	1	—	1	—
Hypochondriasis	3	—	—	—	1	2
Miscellaneous	4	—	1	2	1	—
Total	48	11	10	8	8	11
Duration of illness: 1 to 3 years						
Hysteria	11	3	—	1	2	5
Anxiety state	9	2	3	1	3	—
Sex disorder	16	4	1	5	5	1
Psychosomatic illness	5	1	2	1	—	1
Hypochondriasis	10	1	1	2	4	2
Obsessive compulsive neurosis	2	—	—	1	1	—
Stammering	2	—	2	—	—	—
Miscellaneous	8	1	—	—	1	6
Total	63	12	9	11	16	15
Duration of illness: more than 3 years						
Hysteria	15	4	2	4	2	3
Anxiety state	13	—	3	1	5	4
Sex disorder	17	1	1	2	3	10
Psychosomatic illness	11	1	2	—	7	1
Hypochondriasis	11	—	1	4	4	2
Obsessive compulsive neurosis	3	—	—	1	1	1
Stammering	19	—	1	1	11	6
Miscellaneous	12	—	—	—	3	9
Total	101	6	10	13	36	36
Grand Total	317	58	42	43	76	98

R = Recovery; the patient had recovered completely or almost completely.
GI= Good improvement, significant relief from symptoms.
SI = Slight improvement, some reduction of symptoms, though the relief was not marked.
NI= No improvement.
TD= Treatment discontinued; the patient discontinued treatment without informing the doctor.

ments of Pentothal or Methedrine or 30 sittings of carbon dioxide the entire case was evaluated. Results given in table 1 represent the mean of the impressions regarding improvement as noted by the patient, his relatives and the therapists. The miscellaneous column includes cases which were taken up mainly for differential diagnosis and, as no improvement was anticipated, the majority of them fall in the treatment discontinued column.

Cases of sex disorders have been included in this series; these, on our opinion, could be included in the group of psychoneurosis. Perversions and sexual psychopaths have not been included here.

The results in table 1 do not show the

TABLE 2.—Analysis of the Results of Patients Treated with Pentothal

Disease	*No. of Cases*	*Therapeutic Response*				
		R	*GI*	*SI*	*NI*	*TD*
Duration of illness: less than 6 months						
Hysteria	26	8	3	4	3	8
Anxiety state	16	4	4	1	3	4
Sex disorder	4	1	1	—	—	2
Psychosomatic illness	6	—	—	1	2	3
Hypchondriasis	1	—	—	1	—	—
Obsessive compulsive neurosis	2	2	—	—	—	—
Miscellaneous	7	2	—	—	—	5
Total	62	17	8	7	8	22
Duration of illness: 6 months to 1 year						
Hysteria	12	6	—	2	2	2
Anxiety state	7	—	2	1	1	3
Sex disorder	8	2	2	—	2	2
Psychosomatic illness	2	—	—	—	1	1
Miscellaneous	3	—	—	2	1	—
Total	32	8	4	5	7	8
Duration of illness: 1 to 3 years						
Hysteria	11	3	—	1	2	5
Anxiety state	2	—	—	—	2	—
Sex disorder	13	4	—	4	4	1
Psychosomatic illness	4	1	1	1	—	1
Hypchondriasis	6	—	1	—	4	1
Obsessive compulsive neurosis	1	—	—	—	1	—
Miscellaneous	5	—	—	—	—	5
Total	42	8	2	6	13	13
Duration of illness: more than 3 years						
Hysteria	8	3	1	—	3	1
Anxiety state	6	—	2	1	3	—
Sex disorder	10	2	2	2	3	1
Psychosomatic illness	5	2	—	—	3	—
Hypchondriasis	5	—	—	1	3	1
Obsessive compulsive neurosis	3	—	—	1	1	1
Miscellaneous	7	—	—	—	2	5
Total	44	7	5	5	18	9
Grand Total	189	40	19	23	46	52

TABLE 3.—Analysis of the Results of Patients Treated with Methedrine

Disease	No. of Cases	Therapeutic Response				
		R	GI	SI	NI	TD
Duration of illness: less than 6 months						
Hysteria	3	1	1	—	—	1
Anxiety state	1	—	—	—	—	1
Sex disorder	1	—	1	—	—	—
Depression	3	—	—	1	2	—
Stammering	4	—	1	1	1	1
Miscellaneous	9	—	—	—	1	8
Total	21	1	3	2	4	11
Duration of illness: 6 months to 1 year						
Hysteria	4	1	2	1	—	—
Anxiety state	3	1	2	—	—	—
Sex disorder	2	—	—	1	—	1
Hypchondriasis	3	—	—	—	1	2
Stammering	2	—	1	—	1	—
Total	14	2	5	2	2	3
Duration of illness: 1 to 3 years						
Anxiety state	3	1	2	—	—	—
Sex disorder	2	—	2	—	—	—
Psychosomatic illness	1	—	1	—	—	—
Hypochondriasis	1	1	—	—	—	—
Stammering	2	—	2	—	—	—
Miscellaneous	1	—	—	—	—	1
Total	10	2	7	—	—	1
Duration of illness: more than 3 years						
Hysteria	5	—	1	—	1	3
Anxiety state	6	—	1	—	1	4
Sex disorder	2	—	—	—	1	1
Psychosomatic illness	3	—	1	1	—	1
Hypochondriasis	2	—	1	—	1	—
Stammering	8	—	1	1	1	5
Miscellaneous	4	—	—	—	—	4
Total	30	—	5	2	5	18
Grand Total	75	5	20	6	11	33

relative efficacy of Pentothal, Methedrine and carbon dioxide. Therefore these data were further analyzed in tables 2, 3 and 4.

Discussion

The work was undertaken with two objectives: 1) to study the value of these drugs for better understanding of a patient's problems, and 2) to help a patient as quickly as possible.

Pentothal. So far as the first objective was concerned we found that 67 of 128 patients did not talk during the Pentothal interviews. The psychodynamic factors in the causation of the illness were therefore not clear in these cases.

In 24 cases Pentothal interviews brought

TABLE 4.—Analysis of the Results of Patients Treated with Carbon Dioxide

Disease	*No. of Cases*	*Therapeutic Response*				
		R	*GI*	*SI*	*NI*	*TD*
Duration of illness: less than 6 months						
Hysteria	12	7	1	1	3	—
Phobia	1	1	—	—	—	—
Anxiety state	1	—	—	—	1	—
Sex disorder	3	1	1	—	—	1
Depression	1	1	—	—	—	—
Psychosomatic illness	1	—	—	—	1	—
Miscellaneous	3	—	1	1	—	1
Total	22	10	3	2	5	2
Duration of illness: 6 months to 1 year						
Depression	1	1	—	—	—	—
Miscellaneous	1	—	1	—	—	—
Total	2	1	1	—	—	—
Duration of illness: 1 to 3 years						
Phobia	1	—	—	1	—	—
Anxiety state	4	1	1	1	1	—
Sex disorder	1	—	—	—	1	—
Hypchondriasis	3	—	—	2	—	1
Miscellaneous	2	1	—	—	1	—
Total	11	2	1	4	3	1
Duration of illness: more than 3 years						
Hysteria	2	1	—	1	—	—
Anxiety state	1	—	—	—	1	—
Sex disorder	5	—	1	—	4	—
Psychosomatic illness	3	1	—	—	1	1
Hypchondriasis	4	—	1	1	—	2
Stammering	11	—	—	—	9	2
Miscellaneous	1	—	—	—	1	—
Total	27	2	2	2	16	5
Grand total	62	15	7	8	24	8

forth material which, in our opinion, gave us some idea regarding the psychodynamic factors responsible for the illness. We felt, however, that this material would have come up in the interview even without the help of this drug, but it would have taken a longer time. In this respect we felt that Pentothal had a definite place in shortening the duration of psychotherapy; but we also felt that rapport was the most essential factor in bringing about the improvement.

We felt that Pentothal was conducive to the establishment of better rapport and if we had not had the help of this drug it would have been difficult to make some of our patients come to us a second time.

Horseley (2) found Pentothal useful in unearthing conflicts more easily. Our experience indicated that that was not so in about 30 per cent of our cases in this series. This might be due to the different technique or to the different types of patients (the uneducated and the suggestible group) that we were treating.

We agree with Freyhans (3) that Pentothal is not a truth serum and that if a patient did not want to speak, the therapist was helpless.

Seven cases in the series showed marked abreaction and in all these patients improvement was most gratifying.

In 14 patients there was a relapse after the stopping of the treatment (i.e. after six sittings). We therefore gave a second course of six interviews followed by a gradual reduction in the frequency of the treatment. We found this arrangement satisfactory and our patients maintained improvement though the underlying conflicts could not be resolved because of the low educational level.

Methedrine. In contrast to Pentothal we found that Methedrine was more satisfactory in the study of the psychodynamics of the illness and we felt that without the help of this drug our understanding of the patients' illness would have been less satisfactory.

In 11 patients on Methedrine interviews there was an abreaction and in them the improvement was satisfactory.

In some cases of hysteria, the hysterical features became more marked while in four cases an actual hysterical trance was produced as a result of the drug.

Methedrine helped in promoting intellectual insight in the patient towards his illiness (4). However, it might be stated that an intellectual appreciation of the illness did not produce proportionate improvement in the patient, but it enabled the patient to handle his illness more reasonably.

To these patients who did not talk on standard technique, a higher dose of Methedrine was given (up to 60 mg.). Later we gave 60 mg. undiluted intravenously to these patients. We did not give a higher dose than this because, from personal communications (5), we found that 20 mg. was the average dose commonly used by most of the workers. Even with this high dose of 60 mg. patients did not talk when they determined not to talk, indicating that information could not be forced out of the patient against his will with this dosage.

We found that Methedrine was of help in differential diagnosis. Under Methedrine the psychotic features became manifest and therefore in some cases Methedrine was of use in distinguishing psychoneurosis from psychosis.

One of our patients complained of hematuria which started 2 weeks after the last twelfth injection of Methedrine. The patient was given a through examination and no cause could be found for hematuria.

Another patient with a very small dose of Methedrine (5mg.) became confused and sleepless and these symptoms lasted for about a week. Because of this we could not give further Methedrine treatment to this patient. Incidentally he responded well to supportive sodium Amytal interviews.

Yet another patient not included in this series (because he was treated in private by one of us) exhibited addiction to this drug and insisted on having its injection "per se" even though it was emphasized that these injections produced only temporary relief in him and had doubtful value when not associated with psychotherapy.

Carbon dioxide. In the administration of carbon dioxide our object was to find how much relief the patient experienced from the physiological action, as propounded by Meduna (6). Hence no attempt at psychotherapy was made.

Since improvement did not come to these patients early, the majority of them gave up treatment soon after the start and therefore have not been included in this series.

We found that as a rule patients were *not* apprehensive of the treatment (7). The dreams that the patients reported during carbon dioxide coma as well as the patients' activity during the induction phase or after coma gave useful hints in the understanding of their illness.

Our results in stammering have been uniformly bad as compared with those of Meduna (8) and Smith (9).

One of our patients, a lawyer who felt that he was 40 per cent better after 55 sittings of carbon dioxide, suddenly dropped down to zero per cent when, in order to satisfy his curiosity, we told him about the mechanism of carbon dioxide action and the various views of different workers. In three acute psychotic conditions we gave multiple treatments per day (3 to 6) and all these showed 100 per cent improvement. The spontaneous cure that occurred in these conditions made it difficult to

assess the contribution of carbon dioxide in the patients' recovery. One such patient who was showing very gradual response to carbon dioxide showed rapid improvement with E.C.T.

We therefore felt that since the cases that responded to carbon dioxide in this series were of the suggestible type the mechanism of relief in the case of this agent was probably psychological.

Comments

As the prejudice against psychiatry in India is quite high, people were reluctant to come for treatment; and even when they did, they often desired that no one should know about the psychiatric treatment they received. Although the patients were assured on this score the situation left much to be desired. The patients coming to us belonged predominantly to the ignorant class who did not see the rationale of talking out their trouble. Three of our patients insisted that they should be interviewed with Pentothal only in the presence of their relatives and no amount of explanation on our part was of any avail. Although patients were given appointments, they seldom adhered to them. Therefore very often it happened that more than one patient and their relatives were found outside the therapist's office, discussing their complaints and the nature of the treatment. These discussions were considered to be undersirable, but in the set-up that we were working in, it was not possible to avoid them. One patient strongly resented the intimation for follow-up because his relatives came to know about his illness, which he was anxious to avoid. He even said "I would not have taken treatment if I knew that I was to be bothered with a follow-up". Some of these difficulties could have been handled well by the psychiatric social worker and her absence decreased our ability to help the patients.

It might be noted that in this series there were no controls. In the beginning we tried to have a control series but we found that patients did not continue treatment, as they felt nothing active was being done for them. From these earlier studies, however, we found that injections of distilled water brought temporary relief *only* in cases of hysteria but even in these cases Pentothal gave more satisfactory results.

Summary

1. An improvement rate of 40 to 60 per cent was noted at the termination of treatment in our series of cases treated with Pentothal, Methedrine and carbon dioxide.

2. Pentothal was found useful in cases of hysteria mainly due to establishment of better rapport.

3. Methedrine was of use in development of intellectual insight and better understanding of the psychodynamics of the illness.

4. Carbon dioxide probably acted as a suggestion in the cases that responded.

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CASE REPORT OF AN AMATEUR ARTIST

A Psychopathological Report [1, 2]

JOHN T. EVANS, Ph.D.

The interpretation of artistic productions such as in the Draw-a-Person test or the House-Tree-Person test is well covered in the literature. An unstandardized but pointed request for a drawing was made of Russell Blank who was admitted to this hospital following self-inflicted cuts to his left wrist while intoxicated. The projection of his conflicts was most obvious in his drawings although consciously intolerable to him. His case also provides evidence consistent with the psychoanalytic interpretation of right- and left-sidedness.

Russell is a 25-year-old, fair complexion, blond seaman who was born in Pennsylvania in 1925. His mother died when he was 3 years old. His father told him that the mother had died of pneumonia and it was not until he was 21 that his uncle told him the mother died of a uterine hemorrhage following an attempted abortion. Russell mentioned still another version of how the mother died; he spoke of her as dying when abortive measures failed following which *she cut her wrists*. Following the death of the mother the patient and an older sister were sent to live with the grandmother. The father went back to college, finishing his A.B. and M.S. degrees.

Very little information is available concerning the early years of his life other than that the grandmother disciplined him and yet gave him only one good spanking. Russell started school at 6 years of age and had a tonsillectomy that year. He reached puberty at 12; he derived his sexual education from the older fellows around town and was bewildered by it. Three years later when Russell was 15, his father remarried. Russell says he got along well with his stepmother but that his sister took care of him most of the time. Father at this time was a teacher in high school. He was a teetotaler, well respected, and always had Russell come in at night by 10:30. This presented no problem to Russell because he wanted to keep in shape and be in bed early anyway. He and his father often worked out together in the gymnasium. In spite of this Russell did not feel that his father understood him. He felt rebellious and only wanted to do what he wished to do. During his school years he made very good grades and made a good adjustment. His main interests were art and athletics. Upon graduating from high school at 17 years of age he joined the Navy. Within a year after joining the Navy he experienced his first sexual intercourse. In response to questions he mentioned that he rejects homosexuals who approach him. He did complain, however, in treatment, of the closeness of the bunks in the barracks at the North Atlantic Base.

During his first enlistment in the Navy the patient served in England as a corpsman at a very active dispensary. One particular period is important, occurring in 1944 at the height of the bombings. Russell was sent out to pick up casualties and one casualty was headless. After the war he took a job with a tree company and after working 6 months went to art school. He lived with a friend on 65 dollars a month. They often had only bread and water to eat. At the end of about a year his friend left and got married. Russell reenlisted in the Navy in 1948, shifting his branch of service to yeomen work since he had not been satisfied in the medical department. He complained in treatment of the unmanliness of the work done by hospital corpsmen. While on leave at home he scratched the back of his *left hand* with a razor blade. A second incident occurred in 1950 while he was sketching the men at the enlisted men's club at a North Atlantic base.

[1] From the U. S. Naval Hospital, Chelsea, Mass.

[2] Published with the permission of the Bureau of Medicine and Surgery, Navy Department. The opinions and conclusions are the private ones of the author and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

He kept a razor handy to sharpen his pencils and tried it on the back of his *left hand* "to see if it was sharp." He was intoxicated at the time. A third incident occurred when he came back to the barracks intoxicated. His shipmates tried to quiet him and put him to bed but he kept getting up. He was later found in the washroom with blood dripping from five cuts on his *left wrist* and with a 4-inch cut on his right cheek parallel to a healed slash scar (which had not been previously noted in his health record). It was on this incident that he was transferred from the North Atlantic base to this continental Navy Hospital.

Following his period of hospitalization during which the tests to be reported on were taken, he was returned to duty and was again sent to the same North Atlantic base. Although others did not like the duty at this base Russell liked it well enough to extend his enlistment for a year in order to stay there. He was a member of the basketball team and was also interested in the football and softball activities. He continued his art and reading interests at this base. Within a week after his return to duty he and three others hired a cab to take them to the nearest town, some 90 miles away. All of the men had been drinking, including the cab driver. During the trip they had an accident which was not reported to naval authorities. Two months after having been returned to duty, while intoxicated, Russell said he fell down a bank beside a road, breaking a bottle of whiskey he had under his arm with resulting cuts to his *left forearm*. On examination by the medical officer the cuts did not appear consistent with those inflicted by a fall but appeared to be self-inflicted. He was again rehospitalized and ultimately discharged from the Naval Service.

A follow-up investigation was made 1 year after discharge from the hospital at which time it was found that the stepmother had told Russell that there was no place in the home for him, as she had rented his room. He was welcomed into his aunt's home and was told that he should always consider her home as his own. During his service he had sent quite a bit of money to the aunt which she returned when he was discharged from service. He drank excessively until the money was all gone. At the time of the follow-up investigation Russell was working in a chemical plant and seemed to like it very much. He was drinking less and less and had not missed 1 day since he started to work. His aunt persuaded him to take up his art work again and she said for quite awhile he drew wild, weird things, but that he then began to be more rational in his expression in his drawings. She said he referred occasionally to his hospitalization and seemed resentful over it. Russell's aunt felt that he was slowly improving. He is never abusive or unkind to her family and has never failed to pay her his board. Her children are very fond of him. She also commented that Russell is very resentful toward his father (the aunt's brother).

FIG. 1

Shortly after his first admission he was administered the Rorschach and the House-Tree-Person Test including the post-drawing interrogation. He was also asked to draw a picture, given only the instructions to draw "how he got to the hospital." Figure 1 is the picture he drew. The original of this picture was done in pencil and was 17 x 22 inches. Mr. Phillip Kelsey, Instructor of Art at Boston University, painstakingly traced the drawing in ink so that

it could be reproduced. The patient described the picture as follows: the lower right hand corner of the picture shows the head of a man with a piece missing in the brain. This missing link leads to drinking (the shot glass) which leads to cutting the wrist with the razor blade. Seated above is the doctor who sends the patient to the hospital by means of the book and papers. The patient is sitting on the book in a skeptical mood, not angry and yet not pleased. He believes there is nothing wrong with him and it is a waste of Uncle Sam's time and money to have him in the hospital. While he is still in the hospital he is still reaching into Uncle Sam's pocket, drawing his pay. The hand in the lower right-hand corner of the picture holds the key part of the difficulty and when fitted into the puzzle will change the picture. The whiskey glass will then be displaced and the entire structure will topple down. The row of mountains was included for an illusion of distance, according to the patient. He was also asked about the two parts of the body of the upper right-hand figure and he said they are really joined, and "you have to imagine more." No further information could be elicited from him about the picture.

The House-Tree-Person reproductions are given in figures 2, 3 and 4. Russell was asked to draw a House-Tree-Person on his own time. The resulting drawings were in ink. The post-drawing interrogation (1) was then conducted. He described the house as of two stories, a frame house, for two types of people. The mirrors at the top were for the egotistical people and the windows at the bottom were for the broad-minded people. Broad-minded people observe other things. He feels it is a friendly house and that he would like to have a wife in the house with him because that is natural. The house reminded him of a friend who sees only himself, and that makes Russell mad. He feels the house could do without the top story. (The staircase connecting the two floors, with the locked door, suggests that Russell feels even broad-minded people must guard against the possibility of becoming egotistical.)

The tree Russell drew was an apple tree located at the house he lived in in 1939. The tree is 20 years old and only part of it is living. The part that is living is bearing fruit and green leaves while the *left side* is dead because it wasn't taken care of. The left side survived only 2 years in the beginning. The tree looks more like a woman to him because it is not too strong, does not have strength but

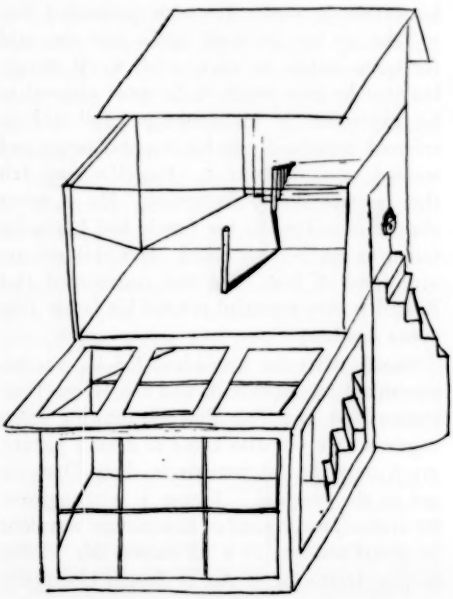

FIG. 2

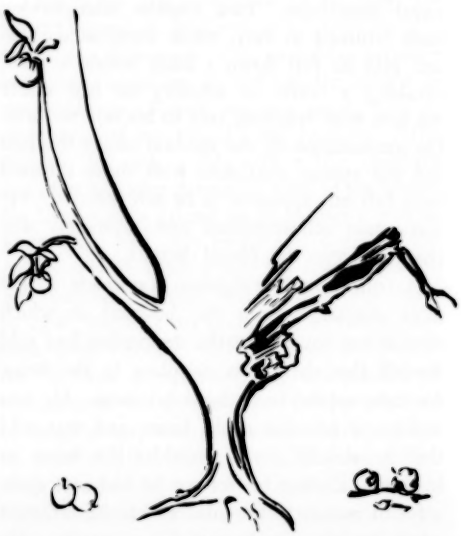

FIG. 3

FIG. 4

does have graceful lines of beauty. He saw the tree off by itself in the fall. If he were to have drawn the sun in this picture he would have put it on the right side (the side on which the green leaves and fruit are growing). The sun would be in the west. The tree made him think of the shade which is cool and refreshing. It reminded him of "good and evil," "health and death." He felt it reminded him of everyone, that everyone goes through life and death. He feels the *left side needed removing.*

Russell describes the person as a boy of 15 years of age. He sees it as himself in his school days, when he went to a new school. He was making new friends and felt awkward because he was young. It reminded him of any boy going into a new high school. The boy was well; nothing was wrong. He felt "awkward and happy," judging by his stance and the look on his face. Russell smiles in thinking about the boy, laughing at the attitude represented. The attitude was one that "all worked out well." He felt that the boy is an average person and that he has observed the same attitudes in others. The boy needed someone to talk to and to be put at ease. The boy is dressed in a well-worn sweater, shirt and pants.

The Rorschach gives a picture of a man who has too little energy available for the defenses, particularly when faced with his markedly vivid fantasy. He appears to distort the perception of his own instinctual strivings. Too little affect is invested in reality and he appears to be driven to overgeneralization. Reality testing was insufficient to properly assess his environment. His adjustment in the environment appears to be quite arbitrary and primarily maintained by his art work. The environment is perceived as quite aggressive and periodically he might be expected to act out unless his artistic sublimation is sufficient. The record further reveals anxiety over bodily harm, particularly possible harm from a powerful mother figure. He has sexual doubts. In general the picture seemed to be that of a schizoid individual maintaining a rather rigid control over his behavior by means of his fantasy and artistic endeavors.

INTERPRETATION

The interpretation of figure 1 makes note of the stressing of the rounded, disembodied stomach area of the figure in the upper right hand corner, suggesting sexual fantasies displaced upward and particularly dealing with pregnancy. He also reveals distortions of affective expression between the placid, effeminate head (lower right) and the morose figure (top right). He gave no explanation for the nudity of both the doctor figure and the morose figure. Interpreting clothes as a social veneer would make possible the inference that Russell feels defenseless and unguarded in his interpersonal relations. Nudity is noted by Levy (3) as suggesting the patient " . . . may be consciously aware of sexual conflicts."

The House-Tree-Person test points out the death of the mother (the description of the tree), the remarriage of the father (the boy 15 years of age and the tree at the house where he lived in 1939). A further trauma is specified when he says the tree is 20 years of age. He was 20 when sent out to pick up the headless casualty in 1944. An important bit of information is also to be gained by his description of the tree, in which it is the *left side which needs to be removed.* In all four of the known incidents he has cut himself on the *left side;* the two scars on his right cheek are unexplained.

Further inferences may be made from the drawings. The stance of the boy is inactive, hands in pockets, and suggests a state of watchful waiting. Probably his orientation to reality is likewise relatively passive and inactive. The instability of his position is noted in figure 1. He rests in an obviously precarious position with respect to treatment (that is, if we, represented by the hand holding the missing piece to the brain, cure him, the alcohol and razor cease to support the morose figure). Likewise, if we remove the unstable base from under Uncle Sam, Russell would no longer be sustained financially. Russell's discharge so removed his dependent relation to Uncle Sam.

Other drawings were made spontaneously during Russell's hospitalization. Frequently, he drew morose looking, elderly, female heads. He spent several days sketching a page of figures. These figures were most interesting in revealing his ambivalence in identifying sexual roles. Wrestlers were drawn in action. Their heads were effeminate in appearance although the bodies were of well developed and muscular men. On the same sheet he drew ballet dancers with the same heads he had drawn on the wrestlers. The heads were, in effect, too masculine (short hair dressed in masculine fashion) for the ballet dancers but too feminine for the wrestlers (the features were delicate and regular). We were unable to gain possession of these drawings because Russell apparently sensed he was revealing himself. He refused to continue with his drawing or painting when we expressed too much interest in his art.

Discussion

Fenichel writes (2, p. 401) that "what is often striven for in suicidal attempts is not "destruction of the ego" but some libidinous aims which through displacement have become connected with ideas that objectively bring self destruction, although they have not been intended as such." Russell appears to be a lad who stresses injury to his left side in a different way than to the right side. Four times the cuts have been on the left wrist or arm, while twice (one known and one unknown) cuts were inflicted on the right cheek. Two levels of pathology are therefore suggested. One, the level of left-sided pathology, seems more prominent than the second, the right-sided pathology.

Clinically we know that Russell was able to maintain a fairly good adjustment until after he learned of the circumstances surrounding his mother's death. He had a problem of adjustment to his step-mother, relating much more to his sister than to his step-mother, but apparently he handled the stress well for 2 years until he entered service. Even in war time service he handled the stress relatively well, including the trauma of having to pick up the headless casualty. He left service after the war, did not adjust well to working and after 6 months entered art school. This lasted something over a year. Then came the announcement from his uncle as to his mother's death. He rationalized his reason for re-entering the Navy but did so shortly thereafter, saying he wasn't getting along too well with his step-mother anyway. At this point the pathology began to be manifest.

Why select the left side on which to inflict cuts? Fenichel (2, p. 224) writes that ". . . the left side of the body is in general more accessible to unconscious influences than the right, because right-handed persons have less conscious interest in it. In addition the symbolic significance of right and left must be taken into account, *right* meaning *correct* and *left* meaning *wrong*, sometimes, especially, *right* meaning *heterosexual* and *left* meaning *homosexual*." Russell's complaint that corpsman work is unmanly and that the bunks were too close in the barracks does suggest a concern over his sexual orientation. The random drawings (the ballet dancers and wrestlers) confirm an ambivalence toward identification of the sexual roles. Even more deeply unconscious is the equation of mother and cutting wrists. His identification of the left side of the tree as feminine, and as dead because uncared for suggests that he identifies his left side as symbolically feminine. He used alternatives in describing the two sides of the tree, "good and evil," "health and death," and noted that the "left side needed removing."

What about the two cuts inflicted on his right cheek? The Rorschach suggested that Russell was at least a schizoid individual with poor reality testing. Fenichel, in discussing schizophrenia (2, p. 434) notes that "the

homosexual conflict may mark an intermediary step in the process of regression to narcissism . . ." Quite possibly, then, we may be seeing a lad who, following a precipitating trauma at 21 (information about mother's death), regresses with resulting preoccupation on earlier areas of conflict (his "unmanly" rate, father's remarriage, and mother's death) with homosexual anxieties aroused which had previously been reasonably well handled. His ungratified narcissistic needs appear to be objectified by cutting his right cheek.

But, what about the right hands in figure 1? The right hand in the lower right corner was said by the patient to be the hand of the doctor. Therefore, we need only to note that the doctor in naval service is male. The right hand being cut with the razor appears to imply that upon being hospitalized, he faced the danger of being confronted with his problems. We noted that he stopped drawing for a period following our obvious interest in his pictures. Might we not then infer that he was more seriously concerned with destruction of the ego, rather than the destruction of some displaced libidinous aim (namely, the passive-effeminate, homosexual side).

The question can be raised as to the value of the drawings. The Rorschach gives a picture of the dynamics. Clinically, as previously noted, he denied anything was wrong with him and even felt there was no need for him to be in the hospital. The drawings appear to clarify the sequence of trauma, the area of conflict, and the means he might be expected to take in controlling his anxiety. The prognosis is particularly pointed in that the predominance of evidence suggests that suicidal gestures are aimed at destruction of a symbolically determined part as different from total destruction of the ego. His disposition was effected with the knowledge that he would be freer in civilian life than in the military and consequently less likely to be faced with an inescapable confrontation with his problems. We recognized that under the influence of alcohol he might well cut himself again but felt that first, it would not be serious, and secondly, that with the freedom of movement in civilian life he would not be faced with the tensions which provoked the gestures, that is, the forced, intimate, relationships with men. The follow-up report 1 year later confirms a lessening of the pathological fantasy (as revealed in his drawings). The pictures also demonstrate that unstructured, projective techniques may often add material to standard clinical procedures.

Conclusion

The artistic representations made by this patient are revealing in delimiting the three major crises of his development, in demonstrating the ambivalent attitudes in identifying sexual roles and in demonstrating his approach to the environment. Although he was not clinically schizophrenic the drawings revealed how close he was to a psychotic break and to self-inflicted bodily harm based on symbolic representation. The emphasis on left-sided self-inflicted injuries suggests that he was not attempting self-destruction but was trying to remove that part of himself which he felt to be wrong, that is, the homo-sexual, passive, effeminate side of himself.

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(3) Levy, Sidney: Figure drawing as a projective test. In L. E. Abt and L. Bellak (Eds.): *Projective Psychology.* New York: A. A. Knopf, 1950, pp 280-281.

(4) Machover, Karen: Drawing of the human figure. In H. H. Anderson and G. L. Anderson (Eds.): *An Introduction to Projective Techniques.* New York: Prentice-Hall, Inc., 1951, pp. 341-369.

BOOK NOTES AND REVIEWS

Books received are acknowledged and given a brief description in this section. Selections serving a variety of interests will be made from these for a more extensive review, as far as space will allow.

BOOK NOTES

Michaels, Joseph J., M.D., DISORDERS OF CHARACTER: PERSISTENT ENURESIS, JUVENILE DELINQUENCY, AND PSYCHOPATHIC PERSONALITY. [Springfield, Illinois: Charles C. Thomas, 1955. Pp. xi + 148. Price $4.75.]

The author's thesis, simply put, is that there may be a psychosomatic disposition or predisposition specific to the delinquent type of personality having a history of persistent enuresis. "All the work stemmed originally from a clinical interest spurred on by a clinical hunch that there was an intimate association between persistent enuresis and personality mal-integration." For eighteen years and in many papers the author has pursued this hunch. This volume attempts to synthesize the individual reports as well as add to them. In the course of time and training, the emphasis has shifted in the author's work from the psycho-biological to the psychoanalytical.

With this expanding frame of reference, the significantly high incidence of enuresis among delinquents led to the view that the impulse character type betrayed its inadequate pattern of control at all levels of personality integration—biological, neurological, psychological, as well as sociological. Persistent enuresis is seen as a kind of paradigm of behavior, manifested early and persisting late, that shows this lack of control due to deficiency in inhibition. The triad of maleness, enuresis, and psychopathy seems to the author to imply constitutional (or hereditary) as well as psychosocial factors. Transient enuresis does not have these implications. "The structure of the personality of persistent enuretics is immature, relatively primitive, and undifferentiated in a psycho-biologic sense. Impulsiveness and lack of control places these disturbances in behavior as a character disorder." Analytically, the ego is weak; super-ego formation is impaired; the oedipal complex is not developed to the degree seen in the neuroses (pre-oedipal).

To recapitulate some of the author's data, we would like to note that among some 220 girls and 255 boys enuresis appeared in 23.4% of the girls and 24.7% of the boys (children in a summer camp). Persistent enuresis (beyond the age of ten) appeared in 10% of the enuretic girls, and in 20.7% of the boys. Among psychopathic personalities and behavior disorders, about 35.7% showed persistent enuresis among the males. There was no question but that as a group, the psychopathic and children with behavior problems showed a much higher percentage of persistent enuresis related as well to many other mal-adjustments. Taken in isolation, no single trait, normal or abnormal, appears to have a real significance statistically or otherwise.

This reviewer is in no case convinced that persistent enuresis can be used as a pathognomic sign of psychopathy or character disorder. Nonetheless, the monograph is an interesting work, worthy of study and discussion. Methodologically, it raises many questions which this reviewer is certainly far from competent to answer.

JOSEPH ZINKIN

Fenichel, Otto. THE COLLECTED PAPERS: SECOND SERIES. [New York: W. W. Norton and Co., 1954. Pp. viii–374. Price $6.50.]

The first volume of the late Dr. Fenichel's collected papers was published in 1953. This volume covering his work for the years 1936 to 1946 concludes the series, and taken together with the first volume presents in permanent form the author's more significant contributions to psychoanalysis. It is to be noted that some papers are here translated for the first time from the German. There are 27 papers presented here.

Fenichel remained up to his death perceptive, wide-ranging, and eternally interested in his field in the broadest sense. He had a commanding knowledge of past and contemporary work and a clear expository style. The topics of the papers range from discussions of the theory of therapeutic results of analysis, early stages of ego weakness, economics of pseudologis phantastica, dream analysis, study of defense mechanisms, psychopathology of coughing, anorexia, neurotic acting out,—to remarks on common phobias. Each paper brings some phase of the subject to light which may have been either overlooked or neglected by others. His was not an orginal, but a deeply analytic and organizing mind. Honest, sincere, and thoroughly workmanlike, his writings have been a great source of enlightment to his successors, young and old. His works as a body remain sources of reference not to be neglected by psychiatrists or psychoanalysts except at their peril. These two volumes are a modest memorial to a fine man.

JOSEPH ZINKIN

BOOK REVIEWS

Eissler, Ruth S., Freud, Anna, Hartmann, Heinz, and Kris, Ernst, Editors. THE PSYCHOANALYTIC STUDY OF THE CHILD. VOLUME IX. [New York: International Universities Press 1954. Pp. 360. Price $7.50.]

This volume is the latest of the by now very familiar and more than useful series which needs no more introduction than the weekly American Medical Journal. Fourteen papers and fifty pages of participants' discussions in a symposium on problems of infantile neurosis is presented in this work. Anna Freud leads off with a paper on "Psychoanalysis and Education" which is an abstract of her Freud Memorial lecture given in 1954. As always, her work is full of meat. We are beginning to see a re-valuation of some of the excessive and extreme practices in child training and education (which have prevailed in analytic as well as lay circles) resulting from Freud's work as it has affected this area in the past twenty-five years. We read, "The disappointments and frustrations which are inseparable from the mother-child relationship are emphasized," and "To put the blame for infantile neurosis on the mother's shortcomings in the oral phase is no more than a facile and misleading generalization". This brings a welcome breath of fresh clean air into a very suffy and agitated room. Things are not so simple as of yore. She states, "No conclusions can be drawn concerning the prevention of neurosis. There is no belief on the author's part that even the most revolutionary changes in infant care can do away with the tendency to ambivalence or with the division of the human personality into and id and an ego with conflicting aims." According to her views, "The emergence of neurotic conflicts has to be regarded as the price paid for the complexity of the human personality." This sober estimate may bring some balance and caution into those circles advocating the millenium if only we will be permissive and permit exaggerated degrees of acting out. Discipline and defenses are still the order of the day if a human being is to be fit to live in social organizations.

There is a valuable, though difficult, paper by Edith Jacobson on "The Self and the Object World" which repays careful study. This paper brings forward some of the latest theoretical work on the ego. The author notes that personality continues to grow and undergo radical changes (from the super-ego aspects) throughout the whole course of life—a concept which merits serious contemplation by therapists as well as theoreticians. The wind is blowing away from the pessimists in this science. Other papers of varying interest and value are by Paul Kramer, Bela Mittelmann, Selma Fraiberg, Olive Stevenson (on the first treasured possession of the child—a paper of great interest, and thoroughly enlightening), Augusta Bonnard, Otto E. Sperling, Ilse Hellman, E. and R. Plank, Edith Buxbaum, etc.

The volume maintains a fairly high level of usefulness, and should be carefully read. For the ninth time, this reviewer notes, "No index." The usefulness of the series is considerably handicapped by this lack.

JOSEPH ZINKIN

March, Hans, LEBENSSCHICKSALE IN PSYCHIATRISCHEN GUTACHTEN. [Stuttgart: Ferdinand Enke. Pp. 353. 1954. D.M. 19.50.]

The author gives, in his first few chapters, basic thoughts on professional ethics and an idea of what the average physician is dealing with when a patient comes to him with little or no organic findings. He claims that a good number of physicians still adhere to the frequently used expression of "psychopathy", "neurasthenia", or telling the patient "it's all in your nerves". He feels the use of such a statement only increases the problem facing the patient and we are not giving him any help at all. Dr. March stresses that through analysis and recent research in psychosomatic medicine we have found that in frequent cases organic symptoms are exhibited by a patient who is suffering primarily from an emotional problem. The author feels it should be obligatory for a medical student and young physician to familiarize himself with recent progress in psychiatry and psychodynamics. Such knowledge could prevent, to some extent, the problem that arises when a neurotic patient goes from one physician to another, never receiving complete satisfaction, which, of course, leads to unwarranted spending of money, the feeling of frustration of the part of the patient and no solution to his problem. Consultation with a psychiatrist in the beginning may possibly have avoided the entire situation, since the root of the problem could probably have been exposed in a few interviews.

In the second chapter of his book, March gives us ten case histories evidently selected from an apparent large amount of psychiatric testimony. In all of these ten cases, we find a criminal offense as the basic reason for presentation, such as theft of books, sex offense, pathologic intoxication and assault and battery. The author, in all cases, was called in to evaluate the subject and to give an opinion as to mental competence and in so proceeding had obtained on each case a long biographical anamnesis which frequently gave insight into deeper emotional problems culminating in the criminal offense.

Along his analytic approach he recommends it as essential for any physician, before giving an opinion, to obtain a complete biographical anamnesis with as many important details as possible in order to better understand the deep dynamics of his patient.

The third chapter is devoted to some controversial testimonies. In these cases he gives extensive verbatim material quoted from statements or letters of various physicians or lawyers and it is quite interesting to see how poorly defined, ambiguous statements may later cause severe problems. He, therefore, recommends to any physician engaged in forensic medicine to be exceedingly careful in preparing his testimony. One of the cases is of specific historic interest as it concerns a patient who, according to the eugenic laws of the Nazi regime, should have been subject to sterilization.

The author closes with the exhortation that this book should be read not only out of curiosity for cases but with deep sympathy for the problems and feelings of the patients. The book presents an excellent contribution to literature and should be of great interest to any physician who has a fair command of the German language, regardless of his specialty, since it deals not only with emotional problems but also sheds a light on the emotional problems in a disintegrated sociological structure such as post war Germany.

W. T. KOENIG

BOOKS RECEIVED FOR REVIEW

MAY 1955

ABRAMSON, H. A. (ED.) *Neuropharmacology—Transactions of the First Conference—May 26, 27, 28, 1954.* Josiah Macy Jr. Foundation, New York, New York.

BETTELHEIM, B. *Truants from Life.* The Free Press, Chicago, Illinois.

CONEL, J. L. *The Postnatal Development of the Human Cerebral Cortex.* Harvard University Press, Cambridge, Mass.

DEUTSCH, F. AND MURPHY, W. F. *The Clinical Interview, Volume II—Therapy.* International Universities Press, Incorporated, New York, New York.

ECKER, A. AND RIEMENSCHNEIDER, P. A. *Angiographic Localization of Intracranial Masses*. Charles C. Thomas, Publishers, Springfield, Illinois.

HYDE, R. W. *Experiencing the Patient's Day*. G. P. Putnam's Sons, Coward-McCann, Incorporated, New York, New York.

JANG, D. AND MATTHES, A. *Die Propulsiv-Petit Mal-Epilepsie*. S. Karger A. G. Basel, Switzerland.

LING, T. M. *Mental Health and Human Relations in Industry*. Paul B. Hoeber, Incorporated, New York, New York.

LORAND, S. (Mg. Ed.) *The Yearbook of Psychoanalysis*. International Universities Press, Incorporated, New York, New York.

LUPS, S. AND HAAN, A. *The Cerebrospinal Fluid*. Elsevier Press, Houston, Texas.

MACKAY, R. P., WORTIS, S. B., BAILEY, P., AND SUGAR, O. *The Year Book of Neurology, Psychiatry and Neurosurgery*. The Year Book Publishers, Incorporated, Chicago, Illinois.

MINZ, B. *The Role of Humoral Agents in Nervous Activity*. Charles C. Thomas, Publishers, Springfield, Illinois.

O'NEILL, D. *Modern Trends in Psychosomatic Medicine*. Paul B. Hoeber, Incorporated, New York, New York.

PEERBOLTE, M. LIETAERT. *The Orgastical Experience of Space and Metapsychologic Psychagogy*. A. W. Sijthoff's Uitgeversmij N. V., Leiden, The Netherlands.

SCHULTZ, J. H. *Grundfragen der Neurosenlehre*. Georg Thieme Verlag, Stuttgart, Germany.

NOTES AND NEWS

GRADUATE TRAINING IN NEUROLOGY AT UNIVERSITY OF PENNSYLVANIA

A graduate medical training grant has been awarded to the Graduate School of Medicine for a two year period by the National Institute of Neurological Diseases and Blindness to initiate a unique program of training teachers and investigators in the field of Neurology. Dr. Julius H. Comroe, Jr., Professor of Physiology and Pharmacology, will be the program director.

The new course, to begin in the fall of 1955, will be the first of its kind in this country. It will be designed for neurologists who have decided to enter or continue a full-time academic career in teaching and research in these specialties. Prospective candidates must either be certified by the American Board of Neurology or must have all or most of the requirements for Board certification. Preference will be given to men who have been selected by their own medical school faculties for advanced training with the understanding that after the academic year at the Graduate School of Medicine, they will return to their own departments to do full time teaching and investigative work as a career. Probably not more than five neurologists will be accepted during the first year. It is hoped that the majority of these will be able to obtain some Fellowship support during the training period. The program will begin in late September 1955 and end in late May, 1956.

The program will have three aims:

1. To improve teaching ability.
2. To provide a good scientific background for medical research.
3. To provide advanced training in neurology and the neurological sciences.

1. *Instruction in the art and technique of teaching.* This will be accomplished largely by practical work. Initially, the group technique will be utilized in which each member of a small group is in turn the lecturer while the remainder of the group serves as a critical audience. Each lecture will be recorded so that the lecturer will have the benefit of both the audience reaction and the playback (see J. Medical Education 29: 39, 1954). Recordings will be kept and compared with later performances in order to gauge progress. Later, the "students" will be given active teaching responsibilities, under supervision. Since teaching involves more than lecturing to large groups, there will also be considerable practice in conference, seminar and ward round types of teaching. No attempt will be made to achieve uniformity in teaching; the emphasis will be upon improvement in those teaching techniques best suited to the personal attributes of each physician. In addition, attention will be paid to the use of visual aids, the proper design of examinations and appropriate faculty-student relationships. Special seminars on medical writing and library utilization will be given. The men will also be given broad training in the basic medical sciences of physiology, pharmacology, biochemistry, anatomy, pathology and microbiology, with particular emphasis on their relation to clinical problems.

2. *The training program designed to provide a good scientific background for medical research.* The Faculty realizes full well that it cannot create investigators by didactic courses. However, it believes that it can provide an opportunity for advanced learning that would be very difficult to obtain through existing means. Among the new courses to be created especially for this group are:

a. Mathematics for physicians engaged in medical research.
b. Statistics and the design of experiments.
c. Recent advances in electronics, chemistry and physics.
d. Techniques and methods of investigation and their critical analysis.
e. Seminars on critical evaluation of medical literature.
f. Philosophy of research.

These courses will be given by outstanding teachers, clinicians, scientists, editors and educators, many of whom will be from universities outside of the Philadelphia area.

3. *Training in clinical neurology and the*

neurological sciences. It is anticipated that "students" in this course will already be well qualified clinically and this advanced group will not be expected to take the regular courses in neurology and allied subjects given in the Graduate School of Medicine for the training of clinical neurologists (though these will of course be available as elective courses). There will be advanced seminars, assigned teaching in neurology and opportunity for investigative work. The course work, coupled with research, will be acceptable as credit toward the degree of Doctor of Science (Med.).

Since many of the trainees eventually may become departmental chairmen, special seminars will also be given on medical administration (including budgeting, personnel selection, hospital administration and voluntary health plans).

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Candidates requiring Fellowship support are urged to write for information as soon as possible.

MENTAL HEALTH CAREER GRANTS

The National Institute of Mental Health announces the award for 1955 of five Mental Health Career Investigator Grants. The awards, totaling $266,239, were recommended by the National Advisory Mental Health Council at its March 1955 meeting. The purpose of the career investigator program, which was initiated in 1954, is to assist in opening up research careers to qualified young psychiatrists and scientists in related disciplines, by enabling them to spend 3 to 5 years in full-time research. The following list identifies the grant recipients and their affiliations, the project titles and duration of support:

Board, Francis, M.D. Michael Reese Hospital.
Psychosomatic studies of adaptation to life stress.
Three years.

Fineman, Abraham, M.D. Judge Baker Guidance Center.
Emotional disorders of childhood.
Three years.

Levinson, Daniel J., Ph.D. Harvard University Medical School.
Sociopsychological study of hospitalized mentally ill.
Five years.

Rowland, Vernon, M.D. Western Reserve University School of Medicine.
Neurophysiology of consciousness and affective states.
Five years.

Titchener, James L., M.D. University of Cincinnati College of Medicine.
Emotional phenomena in cancer patients.
Three years.

MENTAL HEALTH RESEARCH GRANTS TWENTY NEW RESEARCH GRANTS

have been awarded by the National Institute of Mental Health upon recommendation of the National Advisory Mental Health Council at its March 1955 meeting. The total amount awarded in new grants was $282,724.

The Advisory Council at its March meeting also approved the continuation of forty-one research grants, amounting to $571,366. The favorable recommendation of the Advisory Council qualifies these grants for continued support by the National Institute of Mental Health.

RESIDENT PATIENTS IN MENTAL HYGIENE INSTITUTIONS IN NEW YORK STATE INCREASE BY 3,077 DURING YEAR — POPULATION REACHES ALL-TIME HIGH OF 116,513

The number of resident patients in the institutions of the Department of Mental Hygiene increased by 3,077 during the fiscal year ended March 31, 1955, acting Commissioner Arthur W. Pense, M.D. announced today. This brings the total to a new high of 116,513.

There are many factors which determine these figures, Dr. Pense explained, including the number of admissions, the number of direct discharges, the number of patients placed on convalescent care, the number returned from convalescent care, and the number of deaths. The increase is primarily due, however,

to the continued high rate of admissions, which this year reached the near record total of 23,858. (Last year's total of 23,960 admissions was the highest in the 112-year history of the state hospital system.)

The major portion of the increase, 2,428, was in the hospitals for the mentally ill, the Commissioner said. Patients in the state schools for the mentally retarded increased by 631 and in Craig Colony for epileptics, by 18. Resident population for hospitals at the close of the year was 93,379, for schools 20,899, and for Craig Colony 2,245.

"The amount of the increase adheres very closely to the projected trend on which the department based its future requirements last year," Dr. Pense pointed out, "when the voters were asked to approve the $350,000,000 bond issue for mental hospital construction. At that time statistics for the preceding five years indicated that annual increases of 3,000 resident patients could be expected."

Dr. Jesse F. Casey, leading Veterans Administration psychiatrist, has been appointed head of the Psychiatry and Neurology Service of VA's Department of Medicine and Surgery, effective June 15, 1955.

Dr. Casey succeeds Dr. Harvey J. Tompkins, Director of the Service for the past seven years, who is resigning to become Director of the New Reiss Mental Health Pavilion of St. Vincent's Hospital in New York City. In his new post Dr. Tompkins also will serve under the Right Rev. Monsignor James J. Lynch, Secretary of Catholic Charities, as a consultant in psychiatry and coordinator of psychiatric activities for the archdiocese of New York.

Dr. Bernard C. Glueck, Jr., of Ossining, N. Y., Director of Scientific Research (Sex Aberrations) at the New York Psychiatric Institute, who has, since 1952, been director of the sex delinquency research project at Sing Sing Prison, will leave state service July 31, according to Dr. Arthur W. Pense, Acting Commissioner of Mental Hygiene.

Dr. Glueck, who is also attending psychiatrist at Ossining General Hospital, instructor in psychiatry at Columbia University, and associate psychoanalyst at Columbia University Psychoanalytic Clinic, will sever his present affiliations to become an Associate Professor in the Department of Psychiatry at the University of Minnesota Medical School.

His primary responsibilities will be research and teaching activities in that department.

The results of Dr. Glueck's research in sex delinquency will be released, according to the commissioner, sometime later this year. The project has been conducted over the past six years by the Department of Mental Hygiene in cooperation with the Department of Correction.